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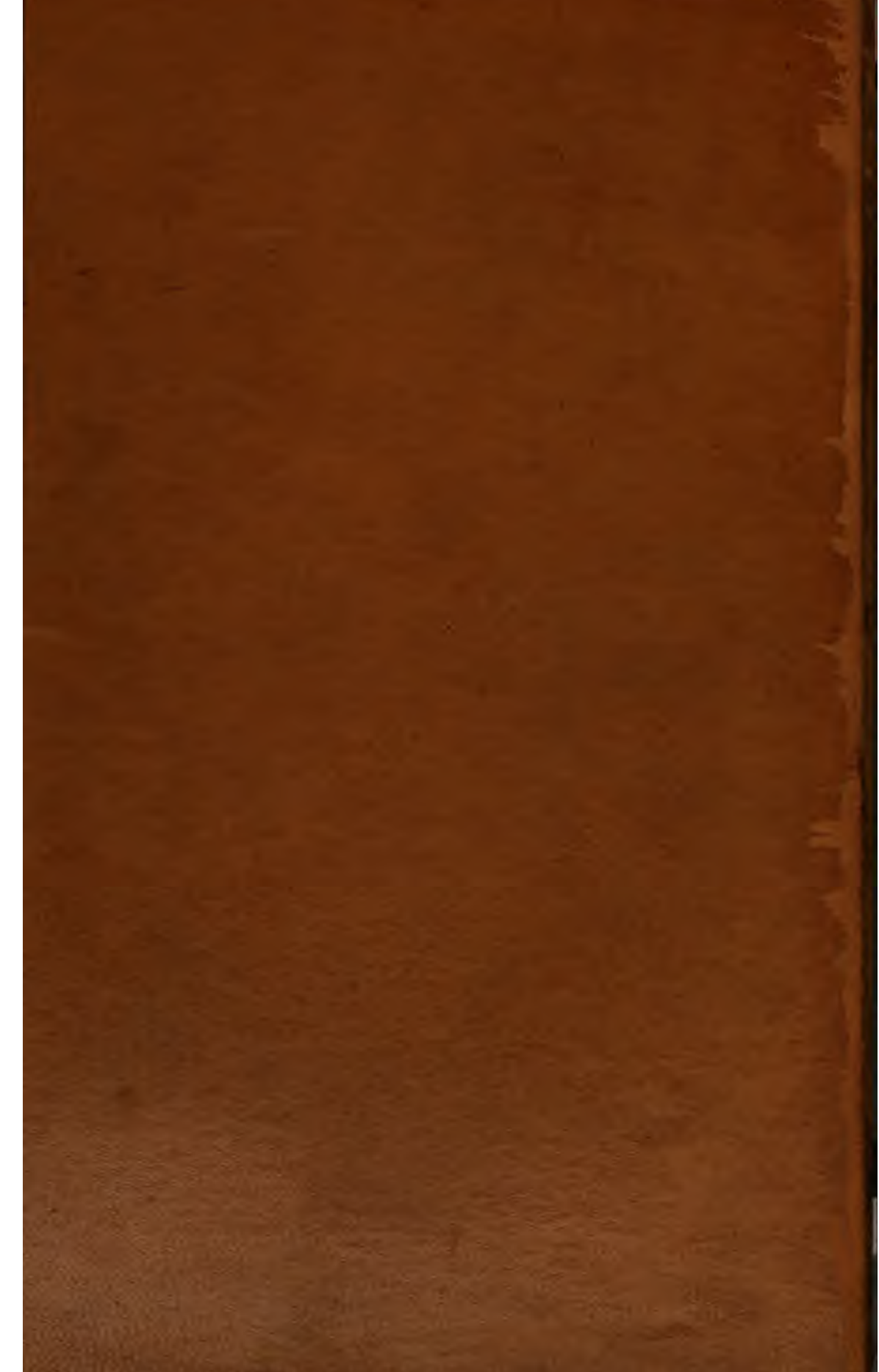
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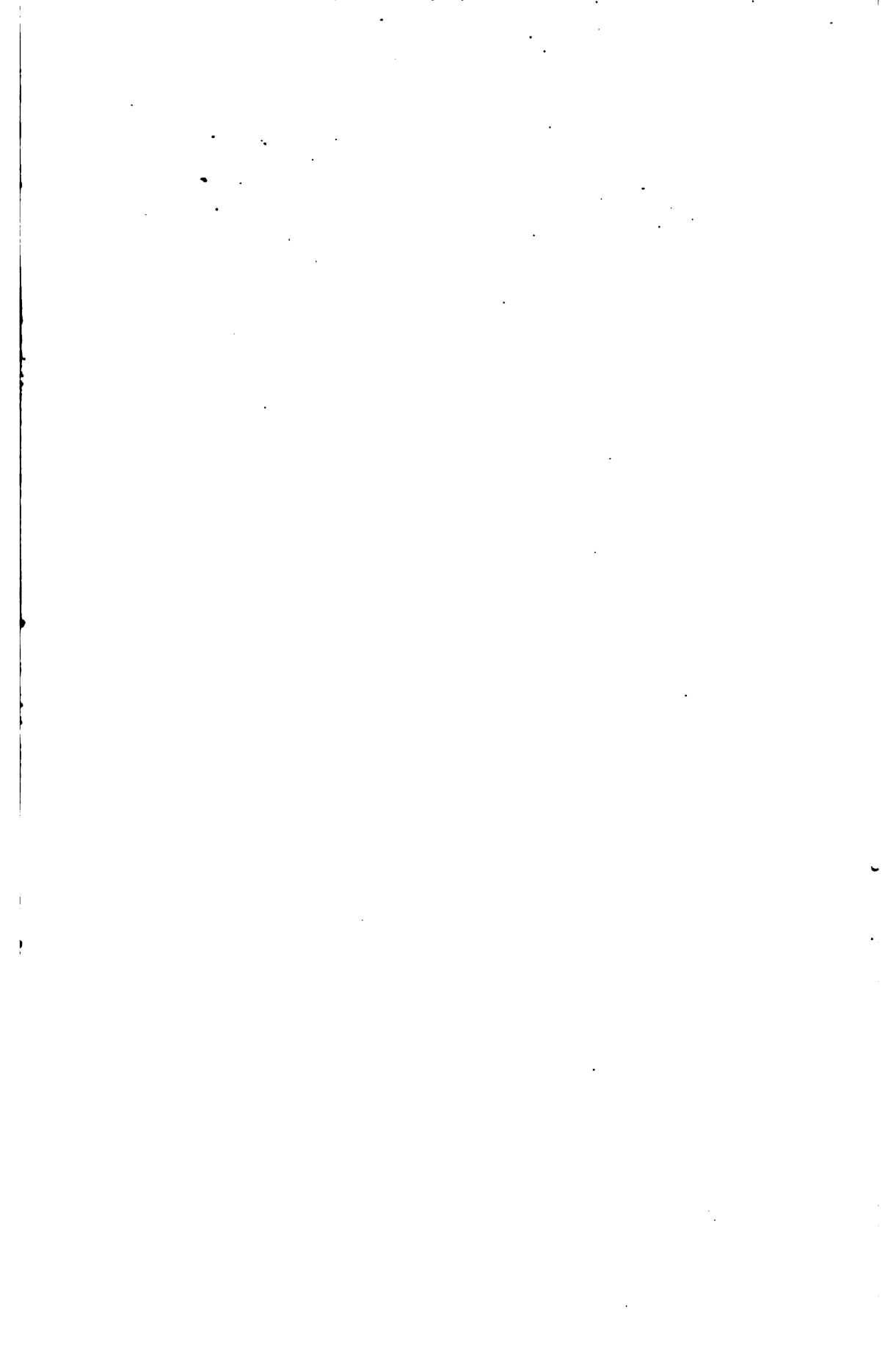
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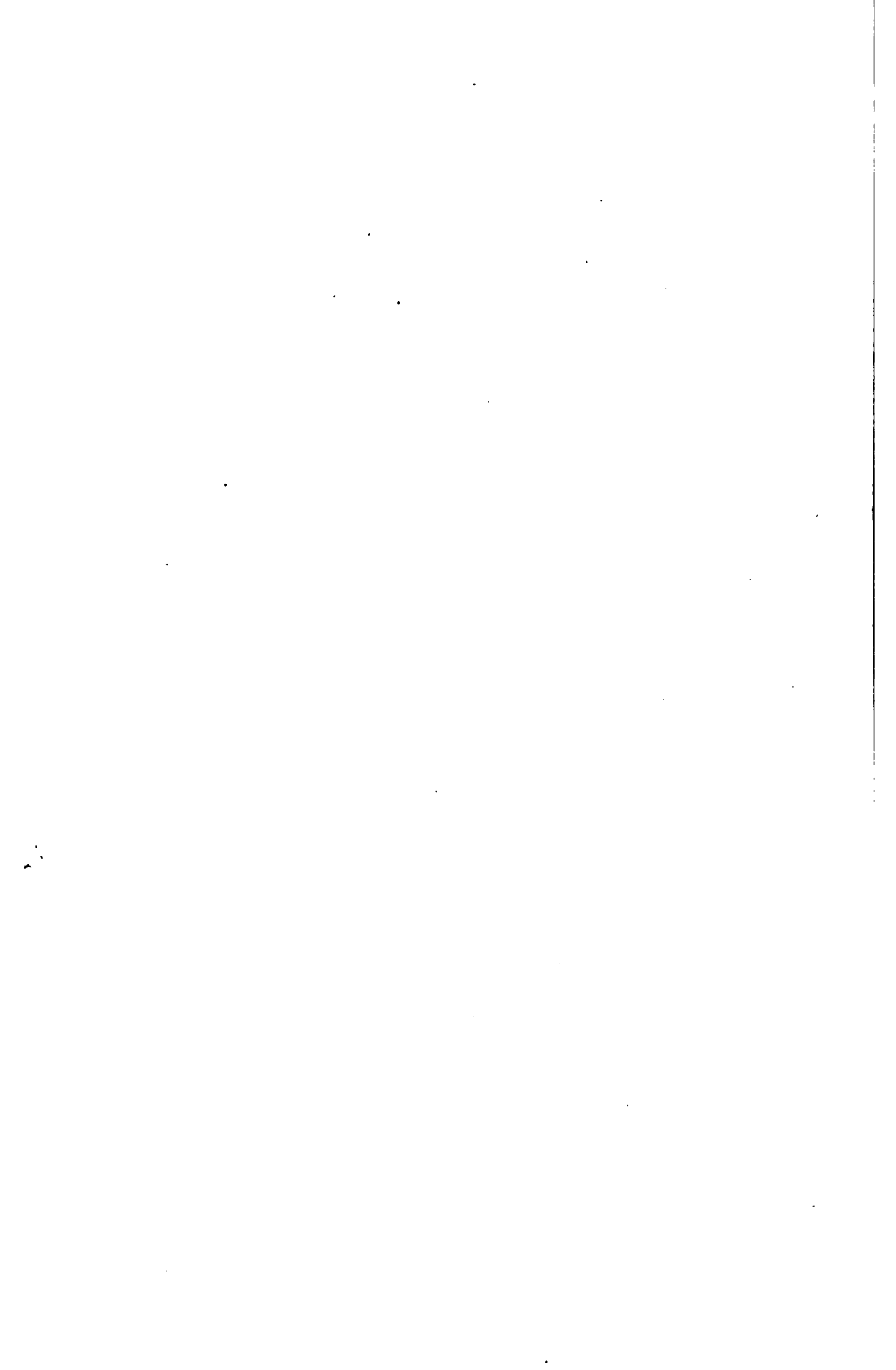
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AMERICAN CYCLOPÆDIA.



VOL. III.
BEAM-BROWNING.



THE NEW
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AMERICAN CYCLOPÆDIA:

A

Popular Dictionary

OF

GENERAL KNOWLEDGE.

EDITED BY

GEORGE RIPLEY AND CHARLES A. DANA.

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THE NEW AMERICAN CYCLOPÆDIA.

BEAM

BEAM (Sax. *beam*, a tree), in architecture, a piece of timber, long in proportion to its breadth and thickness, used either to support a superincumbent weight, or to bind together the parts of a frame as a tie, by resistance to extension, or to hold them apart, as a strut, by resistance to compression. The term is applied particularly to the largest piece of timber in a building, that which lies across the walls and supports the principal rafters. Important improvements have been introduced within the last few years, in various departments of practical construction, by the use of iron beams, especially in the building of fire-proof structures and bridges. Prior to their introduction the only method of securing safety from fire was by massive and cumbersome constructions of masonry. This system of groined arches involves great loss of room, the most solid foundations and heavy walls and piers to sustain their weight and thrust, and often an inconvenient arrangement and division of the interior of the edifice. It is not only not adapted to the purposes of business, but its expense is such as to preclude its use for ordinary warehouses, offices, and dwellings. The immense annual destruction of property by fires demonstrates the great importance of any improvements by which security can be obtained, without excessive cost and inconvenient restrictions on the plan of the building. By the introduction of cast-iron beams and light segmental arches, these results were, to some extent, obtained; but experience has shown that wrought-iron is much better adapted to resist transverse strains, and the testimony of eminent engineers and architects is unanimous in preferring it for this purpose, as both more to be relied on and more economical. The first instance on record of the construction of a building with cast-iron beams is that of a fire-proof cotton mill erected in Manchester by Boulton and Watt, in 1801. It was not, however, until after the elaborate experiments of Mr. Hodgkinson, in 1830, upon the strength and properties of cast-iron, that the best form of section was determined, or that iron beams were used for spans exceeding 14 feet. He found the resistance of cast-iron to compression to be about 6 times as great as its resistance to

extension, and that equal strength could be obtained with half the weight of material formerly used, by giving the proper proportions to the parts subjected to these respective strains. Much, however, was still to be desired, on the score of security and economy, and numerous accidents have justified the general want of confidence in beams of cast-iron, unless great precautions are observed in casting them and properly proportioning their parts; and even when these precautions are observed, and iron of good quality is selected, security can only be obtained by making the most ample allowances for unequal shrinkage in cooling, and for hidden imperfections not apparent on the surface, or to be detected only by the most careful examination. Other objections to cast-iron beams are, that they are liable to fail without warning, especially if subjected to concussion, and to be broken by the frequent application and removal of loads, much less than the permanent load they would sustain with safety. By a system of testing, in some cases, defective beams may be detected; but in others, the load applied in the test itself may so weaken the beam that it may afterward fail with a load much less than that employed in the test, especially if it is to be subjected to concussion or repeated deflections, even though small in amount.—Wrought-iron beams have been used only within the last few years. The successful construction of the tubular bridges, in 1849, over the Conway and Menai straits—the most novel and striking achievement of modern engineering—was one of their earliest applications, and on the most gigantic scale. The laws and the amount of the resistance of wrought-iron to the various strains to which it is subjected in its application to beams, were first determined by the most careful and elaborate experiments, and the superiority of wrought-iron for this purpose clearly demonstrated. By means of the data thus obtained, Mr. Stephenson was enabled successfully to carry out his conception of using for the bridges of the Chester and Holyhead railway, tubular beams of sufficient strength and rigidity to permit the passage of the heaviest railway trains at the highest speeds. These applications of wrought-iron beams on the grand-

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est scale have been followed by their more modest, but even more useful application to fire-proof buildings, whereby, at the same time, perfect security and a material reduction in the cost of fire-proof constructions have been attained. Wrought-iron is an elastic material of fibrous structure. Its ultimate strength of resistance to extension is greater than to compression, but when these strains do not exceed about one-half its ultimate strength, it offers equal resistance to either strain. Within these limits the amount of the extension or compression which it undergoes is about half that of cast-iron for equal loads; but the amount of its extension or compression, before rupture, is much greater than that of cast-iron. A wrought-iron beam will thus be more rigid than one of cast-iron, with any load that will in practice be permanently applied to it; but, unlike the latter, by its excessive deflection when overloaded, will give warning of danger before rupture can take place. This characteristic is of great importance in beams which may be subjected to impact, as the falling of a heavy weight, the resistance of the beam being in proportion not only to its strength, but also to the amount of deflection that it will undergo before rupture. The various processes of forging, rolling, &c., to which wrought-iron beams are subjected in their manufacture, will cause any serious defect to be detected. They can be used for much greater spans than beams of cast-iron, and it is often an important consideration to dispense with columns or division-walls, when large rooms are required. Their strength being about 3 times that of cast-iron beams of equal weight, while the comparative cost is in a much less ratio, they are not only more safe, but also more economical. For wrought-iron beams the most advantageous forms are the double flanché or Γ beam, and the box or tubular beam. Unlike those of cast-iron, the flanches or horizontal sides are usually of equal area. When lateral deflection cannot take place, there is little difference in respect to strength between these forms, the single vertical web and the horizontal flanches projecting from it, of the one, being respectively the equivalents of the 2 vertical and of the 2 horizontal sides of the other. For floor beams the Γ form is ordinarily employed. It is not only more economical, but has the great advantage of allowing the material of which the flooring between the beams is formed to rest upon its lower flanches, thus saving space, and surrounding and protecting the beams from the effects of fire. In the tubular beam not only do its upper and lower sides contribute to its lateral stiffness, but the vertical sides resist lateral flexure in proportion to the width of the tube, exactly as the horizontal sides resist vertical flexure in proportion to its depth, while in the Γ beam lateral stiffness is due principally to the flanches. A vertical load upon a beam is sustained by the resistance of its fibres to the forces of compression and extension. A

body subjected to compression, as a column, if its length be great in comparison with its lateral dimensions, will fail by bending, under a load much less than would be required to crush the material if the column were maintained in the direct line of strain. The tendency of a body subject to compression to yield by flexure being in proportion to the square of its length, while the vertical strength of a beam is in inverse proportion to its length simply, it may often happen that the limit of strength of a beam will be not its vertical but its lateral stiffness, and hence in some cases, as for girders without lateral supports, it may be advisable to use the tubular form, while for floor beams which are secured from lateral deflexion by the filling in between them, the Γ form is preferable. Wrought-iron beams of either form may be made by riveting together plates, angle bars, T bars, or other shapes; the rivets should always be fastened while hot in order that their contraction in cooling may draw the parts closely together. The manufacture of solid rolled beams has effected a further important reduction in the cost of fire-proof construction. This manufacture has been introduced in this country by the Trenton Iron company, at their works at Trenton, N. J. These beams have been adopted by the various departments of the government of the United States in the construction of the many custom houses, marine hospitals, and other public buildings erected since their introduction, to the entire exclusion of the system of groined arches and also of riveted beams, except in cases where solid rolled beams of sufficient size could not be obtained. This reduction in the cost of construction has also led to the erection of many fire-proof banking houses, warehouses, manufactories, &c., within the last 8 years, and the system is rapidly coming into general use. For filling in between the beams for fire-proof floors various systems have been adopted. In France, where fire-proof construction with iron beams is extensively used, the filling in is generally a concrete of refuse materials and plaster of Paris. Beams of the Γ form are placed $2\frac{1}{2}$ or 3 feet apart; their ends are built in the walls and secured by anchors; no beams are placed immediately at the walls parallel with the beams. The beam next each wall is connected to it, and each beam connected with the one next adjoining, by inter-ties of round or square iron of about half a square inch in sectional area, and placed $2\frac{1}{2}$ or 3 feet apart; the inter-ties pass through holes near the centre line of the beams, and are provided with a head at one end and riveted up at the other after they are put in; the ends that are built into the walls are bent to form anchors. Smaller rods parallel with the beams and 7 or 8 inches apart, are suspended from the inter-ties, the ends of the rods being bent up so as to hook over the inter-ties, while the rods themselves are on a level but little above that of the bottom of the beams; or the inter-ties may be supported upon the lower flanches of the beams and be bent up at the ends so as to

hook over the upper flanges, and the smaller rods parallel with the beams be laid upon the inter-ties. A flat centring is placed against the bottoms of the beams, and broken bricks or other refuse materials suitable for concrete are put upon the centring, and plaster of Paris being poured in, the whole mass soon becomes sufficiently set to allow the centring to be removed, and the concrete to be sustained by the iron framework between the beams. In some cases the plaster concrete fills up the whole space between the beams, and flooring tiles are laid directly upon it; in others the depth of the concrete is less than that of the beams, and wooden strips are laid across the beams perpendicular to their length, to which ordinary flooring boards are nailed. A finishing coat of plaster put directly on the concrete forms the ceiling below. Hollow potteries placed upon the iron lattice work, with the interstices filled with plaster, are frequently used instead of concrete. A very light and superior floor is thus made, and the rigidity of the whole system considerably increased. The load to be sustained by the floors for dwellings, offices, and buildings other than manufactories and warehouses for the storage of heavy goods, is assumed at 150 pounds per square foot. In a crowded room each person will occupy not less than $2\frac{1}{2}$ square feet, and will have an average weight of 150 pounds, and adding 15 pounds for the weight of the floor itself, the total load will be 75 pounds per square foot. The estimated load of 150 pounds per square foot is obtained by taking double the actual load to allow for vibration from walking, dancing, and accidental shocks. The following table gives the spans, weights, and depths of the joists used in the floor of the Louvre, the load being taken at 150 pounds per square foot, and the condition maintained that the deflection at the middle of any beam shall not exceed $\frac{1}{4}$ of an inch. A chamber is given to the beams sufficient to prevent any deflection below a horizontal line.

Spans.	Weight of beams per yard.	Depth of beams.
6' 7"	18 lbs.	4 inches.
9' 10"	32 "	4½ "
12' 2"	40 "	5½ "
16' 5"	50 "	6½ "
18' 1"	54 "	7½ "
21' 5"	60 "	7½ "
25'	76 "	8½ "

On testing these floors it was found that a much greater load than 150 pounds per square foot could be applied without straining the beams beyond the elastic limit of the iron, and that consequently any additional deflection they might take under such load would disappear upon its removal. For spans of greater length than 25 feet, riveted beams are made with two T bars, to form the flanges, and two plates of boiler iron of the requisite width riveted one on each side of the stems of the bars. Plane plates of iron have also been used for beams with the system of inter-ties, and concrete, or potteries, above described. A much greater weight of iron is required to obtain the same

strength than when T bars of equal depth are employed, and the system has been abandoned on account of its greater cost and inferior efficiency.—The use of plaster for the filling in between the beams has not been adopted in England or America, because of the greater cost and inferior quality of the plaster that can be obtained. The system known as that of Fox and Barrett has been used extensively in England. Light strips of wood with narrow spaces between them are supported on the bottom flanges of the beams, and reach from beam to beam. On these strips is spread a layer of coarse mortar which is pressed down between them. Concrete, made with cement, is filled in between the beams, and a tile or wooden floor is laid immediately upon it. A rough and a finishing coat of plaster are put directly on the cement to form the ceiling below. Floors have also been made by the use of arched plates of wrought-iron or of corrugated sheet-iron supported upon the lower flanges of the beams, with a filling of concrete above the arched plates or corrugated iron on which the floor is laid. The system of light segmental brick arches springing from the lower flanges of the beams and levelled up with concrete is that most generally employed in this country and in England. It is more strictly fire-proof than any other, and much more economical than the use of arched plates or corrugated sheet-iron, and, except in France, where plaster is cheap, than the French systems. The weight of the floors themselves with a filling of solid concrete or brick arches forms a much greater part than in the lighter French systems, of the total load to be carried by the beams; but on the other hand the arches and concrete add materially to the strength and rigidity of the beams, not only by preventing lateral deflection, but by adding to some extent the resistance to compression of so much of the arches or concrete as is above the neutral line to that of the upper parts of the beams, whereby they become in fact an integral part of the beams themselves. The neutral axis is thus brought nearer the upper side of the floor, and the lower parts of the beams act with greater leverage to resist extension. Only so much of the filling in as is above the neutral line thus adds to the strength of the beams, and in order that this additional strength may be obtained, the filling must not slide along the beam, as it suffers deflection under the load. The weight of the floor is not only less with arches than with solid concrete, but the filling also contributes more effectually to the strength of the system. Long beams should be supported in the middle of their length by wooden scantlings until the cement of the arches or concrete is set, in order to get the full advantage of this additional resistance, which in many cases amounts to 25 per cent. of that of the beams. The arches should have a rise of not less than one inch to the foot of span, and are generally the width of a brick in thickness, unless the spans exceed 6 or 8 feet, when they

should be 8 inches at the soffit and 4½ inches at the crown. If a wooden flooring is to be used, wooden strips parallel with the beams are laid in the concrete filling above the arches, to which the flooring can be nailed. To form the ceiling below the beams wooden strips may be secured to the lower flanches of the beams, to which ordinary furring, lathing, and plastering can be nailed; or the plaster may be put directly upon the arches, so as to show the system of construction, and thus with suitable mouldings a good architectural effect can be obtained. The thrust of the arches on one side of the beams is counteracted by the thrust on the other side, except for beams next the walls or openings. It is usual in order to counteract the thrust on these beams to connect together several of the beams next a wall or opening, by tie rods perpendicular to their length. In some cases also the ceiling and floor have been formed by blocks of stone resting upon the lower flanches of the beams with ornamental designs cut upon the lower face.—The strength of various forms and dimensions of beams may be determined by the ordinary formulæ of resistance. For spans of less than 25 feet solid rolled beams 9 inches deep are usually employed, or often for small spans beams 7 inches deep. The beams are placed at such distances apart as may be necessary to give the requisite strength for the load and span required. For beams of greater span than 25 feet solid rolled beams of sufficient depth cannot yet be obtained, but the increasing demand will probably soon lead to their manufacture. For larger spans, riveted beams are used, and floors with wrought-iron beams and brick arches have been constructed for clear spans of 60 feet. Where the width of the building is great, it is more economical to divide the width into two or more spans by the introduction of columns and girders. I beams may be used for girders, but in most cases hollow box girders are to be preferred.

BEAN, an annual plant of the natural order of *leguminosæ*, and sub-order of *papilionaceæ*, of which the principal species is the *faba vulgaris*, the bean commonly cultivated in England, America, and also on the continent of Europe. The French haricot, or kidney bean, is the only other kind cultivated, though there are wild species in India and South America, which are important articles of diet to the natives. The generic characteristics of the common bean are a straight simple stock from 1 to 2 feet in height, leaves formed of 4 thick, entire, ovate-oblong leaflets, white flowers with a dark silky spot in the middle of the 2 lateral petals, pods divided into partitions and containing 5 or more seeds or kernels, whose size, shape, and color differ considerably in the different varieties of the species. Of these varieties, the mazagan is the earliest and has the smallest seeds, the Windsor has the largest and almost orbicular seeds. There is also the highly esteemed dwarf bean, with a very small seed, and the horse-bean, with a long and cy-

lindrical seed, designed chiefly for the food of cattle. Beans love a rich strong loam, but they do not exhaust the soil, and are often planted advantageously in company with other seeds, particularly with maize. They make a very nutritious food, containing 84 per cent. of nutritive matter, and are healthful to those whose stomachs are strong and able to digest them. Baked beans are a favorite dish throughout New England. There is said to be no other food on which men can do so hard work. Hence they are especially esteemed by farmers, during the laborious haying season, and are the most popular article of diet among the lumberers of Maine and Wisconsin.—The bean is a native of Persia, and of the borders of the Caspian sea. According to Diodorus Siculus, the Egyptians were the first to cultivate it, and to make it a common article of diet, yet they conceived religious notions concerning it which made them at length refrain from eating it. Their priests dared not either touch it or look at it. Pythagoras, who was educated among the Egyptians, derived from them their veneration for the bean, and forbade his disciples to eat it. He taught that it was created at the same time and of the same elements as man, that it was animated and had a soul, which, like the human soul, suffered the vicissitudes of transmigration. Aristotle explains the prohibition of Pythagoras symbolically; he says that beans being the ordinary means of voting on public matters, the white bean meaning an affirmative, and the black a negative, therefore Pythagoras meant to forbid his disciples to meddle with political government. The Roman priests affirmed that the bean blossom contained infernal letters, referring to the dark stains on the wings, and it is probable that all the superstitions on the subject sprang from the blossom and not from the fruit.

BEAN GOOSE (*anas segetum*), a variety of the common European wild goose, neither of the species being known to America. Some persons have believed the bean goose to be the origin of the common domestic goose; but that distinction is generally assigned to the gray lag geese, or common wild goose, which closely resembles the ordinary domestic fowl, except that the ganders are plain gray, like the geese, which, in the wild birds, are never pied; the white mottling being the effect of domestication.

BEAR (*ursus*). "The family of bears are classed," says an agreeable writer, Robert Mudie, in his "Gleanings from Nature," "by the late truly illustrious Baron Cuvier, among those carnivorous animals which are plantigrade, or walk upon the soles of their feet. They differ from the more typical carnivora in many respects. In the first place, they do not confine themselves to animal food, but eat succulent vegetables, honey, and other substances which are not animal; in the second place, they do not kill the animals which they eat in what may be called a business-like manner, by attack-

ing them in some vital part, but, on the contrary, hug or tear them to death; and, in the third place, those of them that inhabit the cold climates, which are their appropriate places of residence, often hibernate during the winter, or some part of it, which is never done by the characteristic carnivora. There are bears in almost all latitudes, from the equator to the pole; but those which inhabit the warmer latitudes are tame and feeble as compared with the natives of the cooler ones; and, therefore, we must regard them as being, in their proper home and locality, animals of the colder regions of the globe. The whole genus has, in fact, a polar rather than an equatorial character, and may thus be considered as geographically the reverse of the more formidable of the strictly carnivorous animals—the lion and tiger in the eastern, and the jaguar in the western hemisphere. These are all tropical in their homes, habitually ardent in their temperaments, and, though they can endure hunger for considerable periods, they feed all the year round, and thus have no season of repose. The bears, again, are seasonal animals, retiring during the winter, and coming abroad in the spring. But it is not from the storm that the bears retire; it is from the cold serenity—the almost total cessation of atmospheric, as well as of living action—which reigns during the polar winter; the storm is both seed-time and harvest to the bears. During its utmost fury, they range the wilds and forests, accompanied by the more powerful owls and hawks, which, like the bears, are equally remarkable for their strength and their impenetrable covering. At those times, many of the smaller animals are dashed lifeless to the earth by the storm, or shrouded in the snow, and upon these the bears make an abundant supper—a supper of days, and even of weeks—before they retire to their long rest. So also, when the storm begins to break, they find a plentiful collection of the carcasses of such animals as have perished in the snow, and been concealed from sight and preserved from putrefaction under it.” —The polar bear (*U. maritimus*), is the largest, strongest, most powerful, and, with a single exception, the most ferocious of the five species of the bear which have been distinguished by naturalists. Its distinguishing characteristics are the great length of its body, as compared with its height; the length of the neck; the smallness of the external ears; the large size of the soles of the feet; the fineness and length of the hair; the straightness of the line of the forehead and the nose; the narrowness of its head, and the expansion of its muzzle. It is invariably of a dingy white hue. The size varies considerably. Some are mentioned as long as 18 feet; but this is probably an exaggeration. Captain Lyon mentions one of 8 feet 7 inches long, weighing 1,500 pounds. The domestic habits of these powerful animals are not much understood; and the fact of their hibernating or not is not very well ascertained, although it is believed that the male, at least, is not dormant so

long as the land bears of the north. The admirable work of the late excellent Kane seems to place it in doubt whether either sex absolutely hibernates, as we find she-bears with their cubs visiting his winter quarters during the midnight darkness. The pairing season is understood to be in July and August; and the attachment of the pair is such, that if one is killed, the other remains fondling the dead body, and will suffer itself to be killed rather than leave it. The same wonderful affection of the female to her cubs has been noticed, from which neither wounds nor death will divide her; and all the arctic navigators, from Dr. Scoresby to Dr. Kane, have recorded their sympathy with, and regret for the poor savage mothers, vainly endeavoring to persuade their dead cubs to arise and accompany them, or to eat the food which they will not themselves touch, although starving—even when compelled to slaughter them in order to supply their own necessities. The habits of the polar bear are purely maritime; and, although their system of dentition is the same with that of the other bears, their food, from necessity, is wholly animal. The polar bear is comparatively rare in menageries, as it suffers so much from the heat, even of our winters, and from the want of water, that it is not easily preserved in confinement. In the reign of Henry III., of England, however, it is curious to record that a white bear was among the collection of wild beasts in the tower of London, for which the sheriffs of the city were ordered to provide a muzzle and an iron chain, to secure him when out of the water, and a long and stout cord to hold him when *fishing in the Thames*. The words italicized seem to identify the species beyond the possibility of error; but one would like to know whence the polar bear was brought, at that early day, so long previous to the commencement of arctic exploration.—The next bear, in all respects, to the polar species, and superior to him in ferocity and tenacity of life, is the grisly bear (*U. horribilis*) of America. This terrible and powerful animal, which is to the American fauna what the Bengal tiger is to that of Hindostan, and the lion to that of central Africa, is of comparatively late discovery, having been first distinguished by Lewis and Clark in their western explorations. Its geographical range is from the great plains west of the Missouri, at the foot of the Rocky mountains, through Upper California, to the Pacific ocean. Its characteristics are strongly marked and clear. “The line of its forehead and muzzle is straighter than in any other species; and its claws, especially those of the fore-feet, are much more produced, and far more crooked, though its general habit is not that of a climber. The snout is black and movable, the central furrow being distinct; the lips are partially extensible; the eyes very small, having no third eyelid, and the irides being of a reddish brown. The ears are short and rounded, and the line of the forehead thence to the eyes is a little convex;

but it continues straight to the point of the snout. The hair on the face is very short; but on the body, generally, it is long and very thickly set. The hair, in the adult, is a mixture of brown, white and black. The tail is short, and, in the living animal, completely hidden by the hair. On the fore paws, the claws are rather slender, but long, as well as crooked and sharp at the tips, though the sharpness is rather that of a chisel, by being narrowed at the edges, than a point. This structure gives the tips of them great additional strength, and accounts for the severe gashing wounds which are inflicted by their stroke. The soles of the hind feet are in great part naked, and the claws on them are considerably smaller than those on the fore-paws, though much more crooked; and their trenchant points form very terrible lacerating instruments, when the animal closes with its enemy in hugging. They are sufficient to tear the abdomen, even of a large animal, to shreds, while the fore-paws are at the same time compressing the thorax to suffocation." The grisly bear is the most savage of all his race. If it be not certain that he will voluntarily attack a human being, it is certain that he will not turn out of his way to avoid him, and that if attacked he will pursue the assailant to the last, nor quit the conflict while life remains. He is, also, the most tenacious of life of all animals. One shot by Gov. Clark's party, after receiving 10 balls in his body, 4 of which passed through his lungs and 2 through his heart, survived above 20 minutes, and swam half a mile, before succumbing to his wounds.—Beside these species, we must also mention the European brown bear (*U. arctos*), and the American black bear (*U. Americanus*). These 2 species are closely allied and are very similar in habits, although the European brown bear is fiercer and more sanguinary, especially as he grows old, when he will, though rarely, attack men; particularly if he have once tasted human blood, when, like the man-eating tigers and lions, he acquires a taste for it, and makes man his especial prey. They are both excellent climbers; passionately fond of honey; great devourers of roots, green wheat, and, in America, green maize; and especial enemies to hogs and young calves; which amiable propensities draw on them the marked vengeance of the backwoodsman. The brown bear is distinguished by the prominence of his brow, above the eyes, which is abruptly convex, with a depression below them—the black bear, by the regular convexity of its whole facial outline, from the ears to the muzzle. It never attacks man, except in self-defence, and then only when hard pressed and cornered. The flesh of the black bear is very good, resembling pork with a peculiar wild or perfumed flavor.—The Asiatic bear (*U. labiatus*), so called from its long lips, is a timid, inoffensive creature, ordinarily—though it, too, will fight fiercely, when wounded, or in defence of its young. It inhabits the high and mountainous regions of India, burrows in the earth,

feeds on ants, rice, and honey, and lives in pairs, together with its young, which, when alarmed, mounts the back of the parents for safety. The habits of this bear are well described in the "Old Forest Ranger," by Maj. Walter Campbell, an English officer; although the ferocity of the animal appears to be somewhat exaggerated in his accounts, notwithstanding that it is represented as fighting in defence of its young.—Three or four other species of bears, principally Asiatic, have recently been distinguished, but all of very inferior interest to those above specified, and one, at least, of extremely doubtful authenticity as a distinct species. This is the Siberian bear (*U. collaris*), which is so nearly identical with the common black bear (*U. arctos*), as to be distinguished from it, only, by a white or grizzly collar encircling its shoulders and breast—which may be, and probably is, a mere casual variety. It is said to be peculiar to Siberia.—The spectacled bear (*U. ornatus*), a native of the Cordilleras of the Andes, in Chili. Its fur is smooth, shining, and black, with the exception of a pair of semicircular marks over the eyes, whence its name, and the fur on its muzzle and its breast, which is of a dirty white color; little or nothing is known of its habits.—The Thibetian bear or Isabel bear (*U. Thibetanus*). Its characteristics are the shortness of its neck and the straightness of its facial outline. Its color is black, with a white under lip, and a white mark in the shape of a letter Y, the stem lying on the middle of the breast, the arms diverging upward on the shoulders. It is a small-sized, harmless, and purely vegetable-eating animal.—The Malay bear (*helarctos Malayanus*). A small bear, jet black, with a lunar white mark on its breast, and a yellowish muzzle. It has a long, slender, protrusive tongue, unlike that of the bears. It is perfectly inoffensive, feeding on honey and the young shoots of the cocoanut trees, of which it makes extreme havoc. When domesticated it becomes exceedingly tame, is sagacious, intelligent, and affectionate, and will not touch animal food.—The Bornean bear (*H. eurypilus*). It differs from the above, by having a large orange-colored patch on the chest. It does not exceed 4 feet in length, and has the same long, slender, protrusive tongue of the species last described, fitting it especially to feed on honey, which, with fruits and vegetables, is its sole food.—There has always existed a doubt as to the existence of any species of bear in Africa. Pliny mentions that, in the consulship of M. Piso and M. Messala, 62 B O., Domitius Enobarbus exhibited 100 Numidian bears, and as many Ethiopian hunters, in the circus, but at the same time asserts that there are no bears in Africa. Herodotus, Virgil, Juvenal, and Martial all speak of Libyan bears, as a well-known animal. Yet Bruce distinctly insists that there is no bear in any part of Africa. Ehrenberg and Forskal both, recently, speak of a black, plantigrade animal called by the natives *kawai* or *karras*, with a lengthened muzzle,

which they both saw and hunted, but in vain. It is, however, a good rule in natural history to adopt no animal on hearsay, or until a specimen is produced. On this view it must be held that there is no African bear—although there is no reason why there should not be—until one shall be produced and described.—Bear-baiting with mastiffs was formerly a favorite and even royal amusement in England; and the readers of Kenilworth will remember the characteristic scene, in which Essex is represented as pleading, before Elizabeth, the cause of the bear-warden against the stage players, Raleigh defending the latter, and quoting the passage of Shakespeare, personifying the queen as “a fair vestal throned in the west,” on which she suffers the bearward’s petition to drop unheeded into the Thames—although, in truth, it may be doubted whether the royal virago would not have in her heart preferred a tough match of “pull dog! pull bear!” to all the “wood notes wild” that Shakespeare ever warbled. In the north of Europe the brown bear is hunted in the winter, with snow shoes, and shot without the aid of dogs. In the west and south-west of the United States, he is systematically chased with packs of hounds bred for the purpose—a cross generally of the large slow foxhound with the mastiff—and the sport is described as highly exciting, and by no means devoid of danger, when Bruin turns to bay, and it becomes necessary to go in with the knife, to close quarters, in order to save the lives of the bear-hounds.

BEAR, GREAT (*ursa major*), a brilliant constellation of the northern hemisphere of the heavens. It must have been, from its noticeable character, one of those clusters which early attracted the attention of star-gazers. It is a constellation which, in the latitude of 45° N., never passes below the horizon. The most remarkable stars in it are 7 (marked by astronomers with the first 7 letters of the Greek alphabet), which, from their peculiar arrangement, have long been designated collectively by some name. They have been called the “wagon,” “Charles’s wain,” and the “dipper.” Four of them are arranged in an irregular square, constituting the body of the “dipper,” while the other 3 are nearly in a straight line, and form the handle. Two of the stars in the body of the dipper range nearly with the north star, and are therefore called the “pointers.” Mizar, in the handle, is a double star. Benetnasch is a brilliant star of the first magnitude, according to some maps; in others it is set down at 1½.—The LESSER BEAR (*ursa minor*) is a constellation of the northern hemisphere, having in it a cluster somewhat resembling the dipper in *Ursa Major*. In *Ursa Minor* there are no stars larger than the third magnitude.

BEAR (BEER) ISLAND, an island about 6 miles long by ½ broad, in Bantry bay, on the S. W. coast of Ireland. It is separated from the mainland, on the N., by a narrow frith, over

against which stands a spur of the Cahoon mountains. The surface of the island is rough.

BEAR LAKE. This body of water (called Great Bear lake) is so named on account of its situation directly under the arctic circle, and therefore under the constellation *Ursa Major*. It is of very irregular shape, having 5 arms projecting out of the main body. Its greatest diameter is 150 miles. Its depth is not ascertained. Two hundred and seventy feet of line gave no bottom near the eastern shore in M’Taviah bay. The principal supply of the lake is Dease river, which enters it from the N. E. Its outlet is, on its south-western extremity, at the bottom of Keith bay, through Bear Lake river, which empties into Mackenzie river. The surface of Bear lake is not more than 200 feet above the Arctic ocean; consequently, its bottom must, like many of the north-western lakes, lie considerably below the level of the sea. Great Bear lake abounds in fish of many varieties, among which the herring-salmon is noted. The 2d land expedition, under Franklin, in 1825, wintered on the western shore of this lake, near its outlet, where they built Fort Franklin. Dr. Richardson, a member of the expedition, mentions a curious circumstance concerning the singing birds of this lake, that when they first appeared after the long arctic winter they serenaded their mates at midnight, and were silent during the day. The waters of the lake are so clear that a white substance can be distinctly discerned at the depth of 90 feet. This lake is situated about 250 miles E. of the Rocky mountains, about the same distance S. of the Arctic sea, and 400 miles N. W. of Slave lake. It is in lat. 66° N. and long. 120° W. (Gr.), and 4° S. and 38° W. from the magnetic pole, as determined by Ross, in 1831. It is the basin of a water-shed of about 400 miles diameter.

BEAR MOUNTAIN, a mountain in the N. E. corner of Dauphin co., Penn. at the foot of which runs the creek and valley of the same name. This valley is one of the famous localities of the anthracite coal, and belongs to what writers on this subject designate as the first or southern coal district of Pennsylvania.

BEAR RIVER. Two rivers bear this name, deserving of mention. I. A river in Utah territory, about 400 miles long, which rises in a spur of the Rocky mountains, about 75 miles E. of Great Salt lake, takes first a north-westerly and then a south-easterly direction, forming nearly a letter V, of which more than half the entire length is in Oregon territory, and finally empties into the Great Salt lake. Its valley is about 6,000 feet above the sea level. At the bend of the river in Oregon, and about 45 miles from Lewis river, are found the famous Beer and Steamboat springs, which Col. Fremont describes in his expedition to Oregon and California (1842-’3), and near which he encamped. These springs are highly impregnated with magnesia, and other mineral substances. The valley of Bear river is narrow through most of its extent, but is described by Col. Fremont as ex-

tremely picturesque in many parts. Steam-boat spring is thus described: "A white column of scattered water is thrown up to a variable height of about 8 feet . . . accompanied by a subterranean noise. . . . It is a hot-spring, and the water has a pungent and disagreeable metallic taste, leaving a burning effect on the tongue." II. A river in California. It rises on the western slope of the Sierra Nevada, runs W. and S., forming the boundary, for some distance, between Yuba and Placer counties, and finally discharging its waters into Feather river, below Marysville.

BEARD, the hair which grows on the chin and lower parts of the human face. That portion, however, which is found on the upper lip is generally distinguished as the mustache, while that upon the sides of the face is known by the name of whisker. Although the beard is ordinarily only seen on the male adult, it appears occasionally in certain exceptional cases on the faces of women and children. Bearded infants and "bearded ladies," who are genuine *lusus naturæ*, have been not unfrequently exhibited at our public museums and show places. Historians mention a Swedish woman who concealed her sex and was enrolled among the grenadiers of Charles XII., and Margaret, duchess of Parma, regent of the Netherlands under Philip II., wore a long mustache on her upper lip. The utility of the beard has been discussed in all ages, and though its functions are not yet understood fully, it seems to have been placed as a vigilant sentinel around the mouth, like the eyelashes around the eyes. The Orientals, it has been remarked, shave the cranium and wear the beard, and ophthalmia is more common among them than loss of teeth. The Europeans retain their hair but shave their beard, and loss of teeth is more frequent among them than ophthalmia. "Thou shalt not mar the corners of thy beard," the command of Moses to the Jews, which is to be found in Leviticus xix. 27, is the first mention that learned men have been able to find in regard to the growth of the beard. This command indicates the early cultivation of the beard among eastern nations, by whom it has been always, and continues to be, held in great respect. We read in the Chronicles that the ambassadors of David having been shaved by order of the king of the Ammonites, the royal prophet sent them to Jericho to conceal their disaster, and to wait for their beard to reappear. The fact that the ancient Egyptian pictures frequently represent the human male figure, especially when of a king or dignitary, without the beard, would seem to indicate that it was a mark of rank to be devoid of that appendage. In ancient India, Persia, and Assyria, however, the beard was allowed to grow long, and was always esteemed a symbol of dignity and wisdom. The sculptures taken to England from Nineveh, and also the reliefs from Persepolis, prove that the races inhabiting those cities wore their beards. Among the modern natives of the East, the same prac-

tice obtains, although with variations in different countries. The Turks, for example, let the beard grow in full luxuriance, while the Persians give only free scope to that upon the upper lip, and cut and trim that upon the chin and the sides of the face, according to fashion or caprice. In Turkey the slaves of the seraglio are shaved, to indicate their servile inferiority to their full-bearded masters. In fact it is considered an infamy, by the Turks, to have the beard cut off, and such is the affection cherished for it, that wives in kissing their husbands, and children their fathers, put their lips to the beards. The Chinese even, who are almost destitute by nature of beard, are said to hold this portion of the hair in such esteem that they occasionally make up for the natural deficiency by an artificial substitute. All the oriental people are accustomed to swear by their beard, and are unable to conceive of a great man without this magnificent attribute. The greatest astonishment of the Egyptians in seeing Napoleon was to find him beardless. Among the classical nations of antiquity, the wearing and shaving of the beard seemed, as in more modern times, to have fluctuated with the caprices of fashion. Previous to the reign of Alexander the Great, the Greeks wore beards, but during the wars of that bellicose monarch they commenced shaving, the practice having been suggested, it is said, by Alexander for the military purpose of depriving their enemies of an opportunity of catching the soldiers by the beard, in the course of the tug of war. The fashion thus begun continued until the reign of Justinian, when long beards became again fashionable. The wise men of Greece were particularly tenacious of this appendage, and "bearded master" became almost a synonyme of philosopher. Diogenes was accustomed to ask the shaved Greeks whether they repented of their manhood.—The year 454 B. C. is given as the period when the Romans first commenced the practice of shaving, and we have the authority of Pliny for the statement, that Scipio Africanus was the first of the Romans who submitted to the daily razor. The antique busts and coins prove that the Roman emperors shaved until the time of Hadrian, who is said to have let his beard grow, for the same reason that George IV. wore a high stock, to conceal an ugly scar. The philosophers, though, from the earliest periods seem to have affected the full-grown beard, by whom it was esteemed, as among the Greeks, a symbol of wisdom; and even during the prevailing imperial fashion of shaving, the emperors would occasionally let their beards grow as a mark of grief. Both the orators and Roman poets do honor to the beard, as for example, Homer to the white one of old Nestor, and Virgil to that of Mezentius.—All the ancient inhabitants of Europe wore beards, at the earliest period of which any record exists. The fashion, however, seems to have varied with them subsequently at different times. The Lombards or Longobards de-

rived their name from the practice of going unshaved. We learn, on the authority of Tacitus, that the ancient Germans cultivated the beard from its first growth until they had killed an enemy in battle, and on the authority of Julius Cæsar that the Britons merely allowed the mustache to grow. Until the introduction of Christianity the Anglo-Saxons all wore beards without distinction, but then the clergy were compelled by law to shave. A writer of the 7th century complains that the manners of the English clergy were so bad that they could not be distinguished from the laity by their actions, but only by their want of beards. The English princes, till the conquest of William I., were in the habit of wearing mustaches, and they felt it to be a very great indignity when the Conqueror compelled them to cut them off, in accordance with the Norman fashion. The practice and precepts of the Christian fathers, who denounced shaving as a violation of the law of God, made the wearing of the beard, during the early mediæval centuries, a distinguishing fashion of the continental kings, nobles, and dignitaries. Royal personages were in the habit of weaving gold with the beard, or ornamenting it with tags of that precious metal. King Robert of France was remarkable for the possession of one of the whitest and longest beards of his day. Of long beards, however, one of the most wonderful was that of a German artist of the name of John Mayo, who was called John the Bearded in consequence. It reached the ground when he stood up, and he was consequently obliged to tuck it into his girdle. The letters proceeding from kings often received an additional sanction by containing in the seal 8 hairs of the sovereign's beard.—The separation of the Greek from the Latin church, which began in the 8th century, was the signal for great perturbations in the toilet of the face. Till then, the popes, emperors, nobles, and, except in England, the priests, had scrupulously abstained from the use of the razor. Leo III., to distinguish himself from the patriarch of Constantinople, removed his beard, and presented to astonished Christendom the spectacle of a shaved pope. Thirty years later, Gregory IV., pursuing the same system, fulminated a bull enjoining penalties upon every bearded priest. In the 13th century the prescription which had laid bare the chins of all the clergy was extended also to the laity, and even to monarchs. Godefroi, bishop of Amiens, refused the offerings of any one who wore a beard. A preacher directed his eloquence against the hirsute King Henry I. of England, and the obedient monarch gave himself into the hands of a barber. The proud Frederic I., called Barbarossa, offered a similar example of resignation. The reluctant kings of France were at first shaved by bishops, and the confessor of Louis the Young refused him absolution till he submitted to lose his beard. This reign of terror was not of long duration. In the 13th century Pope Honorius III. in order

to conceal a disfigured lip allowed his beard to grow, and inaugurated anew the fashion which became prevalent in Europe in the age of Francis I. The right of the clergy to wear their beards was then again disputed. Francis imposed a heavy tax upon every bearded bishop, and in 1561 the college of the Sorbonne decided, after mature deliberation, that a beard was contrary to sacerdotal modesty. It is related that Guillaume Duprat, returning from the council of Trent to his bishopric of Clermont with a beard that would have done honor to venerable Priam, reaching down even to his girdle, was met at the door of his church by the dean of the chapter, well supported, and brandishing a large pair of scissors. There was but one alternative, and Duprat threw off his surplice and departed, declaring that he would save his beard though he lost his bishopric. The golden age of the beard in France was the reign of Henry IV., when its various styles were distinguished as the pointed beard, the square beard, the round beard, the aureole beard, the fan-shaped beard, the swallow-tail beard, and the artichoke-leaf beard.—The dignity of the beard in England at this period may be inferred from this incident just previous to the execution of Sir Thomas More. As that great man was about being beheaded, perceiving that his beard was so placed that it would not fail to be injured by the axe of the executioner, he drew it aside saying: "My beard has not been guilty of treason; it would be an injustice to punish it." During the reign of Queen Elizabeth the beard was worn generally by those of higher rank, and was trimmed in a style distinctive, more or less, of each class. The bishop had his beard cut in a peculiar way, and we find its form still preserved in the bands of lawn now worn by the modern ecclesiastic. The soldier and the judge, too, each had his particular fashion of wearing the beard. Taylor, the water poet, quaintly alludes to these variations in the following distich:

The barbers thus (like tailors) still must be
Acquainted with each cut's variety.

The fashion of wearing the beard began to decline subsequently to the reign of Queen Mary, and at the time of the restoration of Charles II., there was no hair worn upon the face but the mustache, which, however, was luxuriantly cultivated by the courtiers and gallants of those days. The decline of the beard in France dates from Louis XIII., and in Spain from the accession of Philip V. The Russians clung tenaciously to their beards, until Peter the Great, returning from his European tour, came home with his determined passion for reform. One of his first edicts toward the compulsory civilization of his people, had reference to the beard. He taxed this appendage, and moreover, as his subjects seemed disposed to keep their beards at any expense of money, he made a more direct appeal to their feelings, and ordered all those he found bearded to have the hair plucked out with pincers or shaven with a blunt razor.

This resolute monarch finally succeeded in smoothing the face of every subject in his dominions. Thus the practice of shaving became almost universal in Europe until within a few years. France was the first to return to the old fashion of wearing the beard, and for a while it was the distinctive mark of the Frenchman. The Briton, with his usual tenacity of habit, was the last to move, and it was only when the utility of the beard was made manifest, that he was willing to assume it. In the United States the change occurred about the same time as in Great Britain, and now the practice is becoming very general in both countries.—While in every age the beard has been subject to the caprices of fashion, it may be remarked that in art it has been uniformly ascribed to Jupiter, Brama, and other representations of divinity, while among men it has been very generally a characteristic of the sage and philosopher. Apart from good taste, which would seem to inculcate the preservation of what is an essential characteristic of the manly form, there are certain practical advantages to be urged in favor of the beard. In some employments, as in that of the steel grinders, where an irritating dust and small particles of hard material are in danger of being inhaled, and thus producing inflammation of the lungs, the wearing of the beard is found to be an important safeguard. Accordingly, steel grinders, railroad engineers and firemen, stone cutters, and all those thus exposed, have almost unanimously given up shaving. A change which has thus been inaugurated among practical working people for purposes of health and convenience, is likely to be lasting, and it is probable that before long we shall return to our primitive and national character as a bearded people.

BEARD, JOHN, a celebrated English singer and actor, born in 1716 or 1717, and died in 1791. He first acquired distinction by the manner in which he sang Galliard's hunting song, "With early horn." He afterward appeared as an actor at Covent Garden and Drury Lane. In 1758 he performed Macheath for 52 successive nights, with Miss Brent as Polly. Beard married the only daughter of the earl of Waldegrave, in 1789. His voice was a beautiful tenor, and he was especially distinguished as a singer of Handel's compositions.

BEARING, in navigation and surveying, signifies the angle made by any given line with a north and south line. The bearing of an object is the direction of a line from the observer to that object.

BÉARN, formerly a county and duchy in southern France, now the eastern portion of the department of Basses-Pyrénées, stretching from the snow-covered peaks of the mountains, and rapidly descending into a hilly landscape, is well watered, and excellently adapted for raising cattle and horses. The population is comparatively very large, of Basque descent, speaking the Basque tongue to this day, and understanding little French; energetic, industrious,

and freedom-loving. They produce iron and iron fabrics, flax and linen goods, cattle, horses, wine, and grain, for export as well as home consumption, and have withal spare hands enough to send annually hundreds of vigorous youths to work in the northern provinces of Spain as manufacturers, or further south as water-carriers, who return with their earnings to spend them at home. The capital is Pau. The first feudal possessor of the whole of Béarn, called Centullus, is mentioned in the 9th century, whose descendants, in the male line, with short interruptions, swayed it up to 1800, when it fell into the hands of the neighboring counts of Foix, by marriage, and by the female line of this house into the hands of the kings of Navarre, by the last of whom, Henry IV., it was united with France, though the act of annexation was not finally accomplished till 1620. Pop. about 190,800.

BEARS AND BULLS, terms first applied in the London exchange to speculators in stocks. Two parties having contracted, the one to deliver and the other to take stocks at a future time at a specified price, it is the interest of the delivering party, in the intervening time, to depress stocks, and of the receiving party to raise them. The former is called a bear, in allusion to the habit of that animal to pull down with his paws, and the latter a bull, from the custom of that beast to throw up with his horns. There is ordinarily no exchange of stocks, but when the time of delivery arrives the losing party pays the difference between the price of stocks then and at the time the contract was made. The terms are now recognized in the exchanges of the largest cities of England and America. The corresponding terms in French are *baisier* and *hausser*, or speculators on a fall and on a rise.

BEAS, or BEYPASHA, anciently called Hyphasis, a river of the Punjab, in western India. It rises in the Himalaya mountains, 13,200 feet above the level of the sea, and empties into the Sutlej at Endreesa. Its length is estimated at from 210 to 220 miles. In the winter it is fordable in most places, but in summer has been known to be 740 yards wide at a distance of 20 miles from its confluence with the Sutlej.

BEASLEY, FREDERIC, an American divine, and professor of mental philosophy in the university of Pennsylvania, born near Edenton, N. C., in 1777, died at Elizabethtown, N. J., Nov. 2, 1845. He graduated at Nassau hall in 1797, and after being for 2 years tutor in that institution, was in 1801 ordained deacon in the Episcopal church, and was successively engaged as rector in Albany, N. Y., and in Baltimore, Md. He was from 1813 to 1828, professor of mental philosophy in the university of Pennsylvania, and became favorably known by his metaphysical work in defence of the philosophy of Locke, which he published in 1822, entitled a "Search of Truth in the Science of the Human Mind." After retiring from the university he took charge of a church in Trenton,

where he wrote an answer to the doctrinal views which Dr. Channing was at that time propounding. From the year 1886 he lived in retirement at Elizabethtown, pursuing literary and theological studies. He published an "Examination of the Oxford Divinity," during the tractarian controversy, which was highly esteemed at home and abroad both for its style and erudition.

BEATIFICATION. The decree of beatification precedes the solemn canonizing of a saint, in the Roman Catholic church, and is pronounced by the pope and cardinals. In order that the process may be commenced, it is necessary that the candidate should have died with a general reputation for sanctity and supernatural gifts, or should have suffered martyrdom; and that the commencement of the process should be requested by some person of consideration. A very long and careful examination into the grounds for this popular reputation of sanctity, conducted in a strictly judicial manner, is entered into, which, according to the ordinary rule, cannot be completed until 50 years after the death of the individual. The points to be examined, on which the ultimate decision rests, are, whether the person practised virtue in a heroic degree, and performed miracles. It is necessary that 2 miracles be wrought, after the process has commenced, and before the beatification takes place. These ostensible miracles must be examined by men of science, and particularly, in case of miraculous cures, by the physicians of the parties. The promoter of the faith raises all possible difficulties and objections against the beatification, and is therefore usually called "the devil's advocate." By the decree of beatification it is declared that the servant of God possessed heroic virtue and miraculous gifts, that he is actually among the blessed in heaven, and entitled to special honor. The public veneration, which is allowed to be given to one who is beatified only, is restricted to certain places, communities, or persons, and also to certain specified acts of respect. The right of pronouncing the decree of beatification, formerly conceded to bishops, was reserved to the holy see, by Alexander III., A. D. 1170.

BEATITUDE, the Christian term corresponding to the *eudaimonia* of the Greeks, and the *summum bonum* of the Romans, meaning the highest degree of happiness of which our nature is susceptible, and applied particularly to the state of the elect in heaven. It was a favorite topic of discussion among the scholastic theologians, who divided it into subjective and objective, perfect and imperfect, and made our eternal happiness consist in the exaltation of the Deity, in singing with choirs of angels praises to the Most High. Recent theologians have generally made beatitude consist in honoring God and sharing his perfections, a sublime though indefinite conception. Though the state of beatitude be incomprehensible to us, yet the belief in it is a motive in the present life which begets

heroism in the midst of misfortune, and an adherence to virtue in the midst of evils.—The **BEATITUDES** is the name given particularly to the 8 maxims which are the exordium to Christ's sermon on the mount.

BEATON, DAVID, OF BETHUNE, as his name is more correctly spelled, cardinal archbishop of St. Andrew's in Scotland, born in 1494, died in 1546, was descended from an illustrious Scottish family. He was first made abbot of Arbroath, then bishop of Mirepoix in France, afterward archbishop of St. Andrew's and primate of Scotland. Paul III. created him a cardinal, at the request of James V., and afterward made him papal legate in Scotland. Cardinal Beaton was highly esteemed as a statesman, by James V. of Scotland and Francis I. of France. He was most zealous and active in his efforts to resist the progress of Protestantism in Scotland, and caused George Wishart, a young preacher, belonging to a powerful Protestant family, to be burnt at the stake, on the charge of heresy and treason. After the death of James, Beaton was imprisoned for a short time by the earl of Arran, the temporary regent, but soon released. In 1544, 2 years before the execution of young Wishart, the chief of the Wishart family with some others had conspired to kill the cardinal, while travelling through Fife. On May 28, 1546, the same persons, or relatives of theirs, having the same names, "stirred up by the Lord," as Fox says, in his Martyrology, attacked the cardinal in the castle of St. Andrew's, while he was still in bed, killed him, and hung his corpse out of the window, vested in the insignia of his rank. Knox, on hearing of this "godly fact," as he terms it, led 180 men to the defence of the murderers, who were also protected by the English government to the extent of its power.

BEATRICE, PORTINARI, the woman whose name has been immortalized by Dante's poems. She belonged to a Florentine family, and was quite a child when Dante, then 9 years old, saw her for the first time; she had on a dark-red dress with ornaments suited to her age, and her appearance made a deep and lasting impression upon the susceptible mind of the boy. Nine years later, he met her again dressed all in white, in company with two elderly ladies; she cast a glance toward the poet, who, trembling and amazed, stood aside; she courteously bowed to him; and from that time, she became his inspiring muse. But such a lovely being could not stay long on this earth; God seemed to have created her for one of his angels and was soon to recall her to heaven. Such was the surmise of her lover, which was early realized. She was only 24 when death overtook her beautiful form in 1290; but she had left her earthly existence to assume the immortal one given to her by genius. Beatrice's soul always glides around her poet, whose pure ideal love is a perpetual worship. His poems everywhere afford evidence of the depth of this feeling; but the most striking instances are perhaps to be found in the

30th and 31st cantos of the "Purgatory." There Beatrice appears in a cloud, with a white veil and an olive crown, clad in a scarlet robe and a green mantle; she is the emblematic personification of divine wisdom.

BEATTIE, JAMES, a Scotch poet, son of a respectable farmer, born in Kincardineshire, Oct. 25, 1735, died at Aberdeen, Aug. 18, 1803. He obtained a scholarship at Aberdeen, and subsequently became assistant in the Aberdeen grammar school, and married the daughter of the head schoolmaster. After this event he began to be distinguished as a writer, and in 1771 commenced the publication of his work called the "Minstrel." This obtained for him the patronage of Lord Errol, and caused him to be appointed professor of moral philosophy and logic in Marischal college. In 1765, he published a poem, the "Judgment of Paris," which failed of any celebrity. The work which gained him the greatest fame was an "Essay on the Nature and Immutability of Truth," in opposition to sophistry and skepticism. It was designed as a reply to Hume, and was so much in demand that in 4 years 5 large editions were sold; and it was translated into several languages. It procured for its author the degree of LL. D. from the university of Oxford, and a private conference with George III., who granted him a pension of £200. He was urged by the archbishop of York and the bishop of London to take orders in the church of England, a proposal which he declined. While in London he became intimate with Dr. Johnson, Dr. Porteus, and other distinguished literary characters. In 1783, he published "Dissertations, Moral and Critical," and the "Evidences of the Christian Religion," written at the request of the bishop of London. In 1790 he published the 1st volume, and in 1793 the 2d, of his "Elements of Moral Science;" subjoined to the latter was a dissertation against the slave trade. His last publication was an account of the life, writings, and character of his eldest son, James Hay Beattie. Two paralytic strokes, which followed the loss of reason by his wife, caused his death, at the age of 68.

BEATTIE, SIR WILLIAM, M. D., born 1770, died 1843. He was physician to the fleet, in England, and also to Greenwich hospital. He was present at the battle of Trafalgar, Oct. 21, 1805, attended on Lord Nelson's last moments, and, on his return to England, published an "Authentic Narrative" of his death. In 1831, William IV. knighted him.

BEAUCAIRE, a commercial town of France, department of Gard, on the right bank of the Rhone. It is connected by a suspension bridge with Tarascon, opposite, at the head of the canal de Beaucaire; and is contiguous to the junction of railways to Avignon, Marseilles, Orléans, and Alais, by Nîmes. It has an annual fair, established in 1217, by Raymond, count of Toulouse, which was formerly the largest in Europe. Population in 1856, 12,713.

BEAUCHIEF ABBEY, a chapelry of England, county of Derby. Fitz-Ranulph, lord of Alfreton, built an abbey here in expiation of the murder of Thomas à Becket. A portion of this abbey still remains, and forms the tower of the present chapel.

BEAUCLERK, TOPHAM, one of Dr. Johnson's favorite friends, born 1739, died March 11, 1780. He was the only son of Lord Sidney Beauclerk, 3d son of the 1st duke of St. Albans, and in general appearance much resembled his great-grandfather, Charles II. He studied at Oxford, and his conversational talents so much charmed Johnson that when "The Club" was founded, in 1763, he was one of the nine members who originally formed it. When he went to Italy, in 1762, Johnson wrote to his friend Baretti, warmly commending Beauclerk to his kindness. In 1765 he accompanied Johnson on a visit to Cambridge. In 1768, when he seduced Lady Diana Spencer, wife of Viscount Bolingbroke (he married her immediately after she was divorced), Johnson would not hear him attacked. A short time before his death, Johnson said of him: "He is always ready to talk, and is never exhausted;" and when communicating his death to Boswell, he said: "His wit and his folly, his acuteness and maliciousness, his merriment and reasoning, are now over. Such another will not often be found among mankind."

BEAUFORT. I. An eastern county of North Carolina, bordering on Pamlico sound. It has a level surface, and a sandy or marshy soil. The productions in 1850 amounted to 193,542 bushels of Indian corn, 121,941 of sweet potatoes, 28,409 lbs. of butter, and large quantities of tar and turpentine. There were 26 saw and shingle mills, 47 tar and turpentine manufactories, 2 turpentine distilleries, 14 churches, and 1 newspaper office. The Pamlico river, which intersects the county, is navigable by vessels drawing 8 feet of water. Formed in 1741, and named in honor of the duke of Beaufort. Capital, Washington; pop. in 1850, 14,811, of whom 5,244 were slaves. II. A southern district of South Carolina, bordering on the Atlantic, separated from Georgia by the Savannah river, and having an area of 1,540 sq. miles. It is bounded on the N. E. by the Combahee river, and intersected by the Coosawhatchie. All of these rivers are navigable by small vessels, and the places on the Savannah are accessible by steamboats. The surface is low and level, the soil sandy and alluvial, producing cotton, rice, Indian corn, and potatoes in great abundance. In 1850 it yielded 47,280,082 lbs. of rice, 12,672 bales of cotton, 492,671 bushels of Indian corn, 485,077 of sweet potatoes, and 29,267 of oats. There were 55 churches, 1 newspaper office, and 598 pupils attending public schools. Beaufort is one of the most thickly settled districts of the state. Capital, Coosawhatchie; pop. in 1850, 88,805, of whom 82,279 were slaves.

BEAUFORT. I. A port of entry, and the capital of Carteret county, North Carolina. It

stands at the mouth of Newport river, a few miles from the sea, is accessible by steamboat from Albemarle sound, and has a commodious and well-sheltered harbor, considered the best in the state. On Bogue point, at its entrance, is Fort Macon. Beaufort contains a courthouse, a jail, 1 or 2 churches, and several seminaries. It is a place of extensive trade, chiefly in turpentine and resins. The shipping of the district, June 30, 1853, amounted to 776 tons registered, and 1,851 tons enrolled and licensed. During the preceding year, 4 schooners with a burden of 460 tons had been built here. Pop. in 1853, about 2,000. II. A town and port of entry on Port Royal river, Beaufort district, South Carolina. It is about 16 miles from the sea, and has a spacious harbor, at the mouth of which, however, is a bar which prevents the entrance of vessels drawing more than 11 feet of water. The town has little commerce, and is unhealthy in the autumn. White pop. in 1850, 879; slave pop. not given.

BEAUFORT, a large inland district of Cape Colony, South Africa, lying south of the Boesjesmans' territory, and having an area of about 20,000 sq. miles. Pop. in 1838, 5,904. Beaufort is its capital town.

BEAUFORT, FRANÇOIS DE VENDÔME, duke of, a grandson of Henry IV. of France, born in Paris, January, 1618, died June 25, 1669. He is peculiarly known by the conspicuous part he took in the civil war of the Fronde. He had served with some distinction during the 30 years' war, and meddled in the conspiracy of Cinq-Mars against Cardinal Richelieu. In consequence of this last affair, he was obliged to seek a refuge in England. On the accession of Louis XIV., the queen-regent treated him very favorably, but was soon dissatisfied with his impertinent manners. Her displeasure threw him on the side of the malcontents, and he became one of the leaders of the Frondeurs. He was extremely popular with the Parisians, on account of his descent, his familiarity with the citizens, and the pleasure he took in using their language, or even their slang. He was consequently called *le roi des halles*, and he exercised a powerful influence on the common people against Cardinal Mazarin, who was twice driven out of France. But becoming tired of civil war, he made his peace with the court; and Louis XIV. having taken into his hands the reins of government, Beaufort was appointed to the command of the navy. In 1664 and 1665 he successfully led attacks against the corsairs of Africa; in 1666 he was at the head of the fleet which was to join the Dutch to make war against England; lastly, in 1669 he went to the assistance of the Venetians, then besieged by the Turks in the island of Candia; he fought bravely and was killed in a sally.

BEAUFORT, HENRY, cardinal, and bishop of Winchester, born at the castle of Beaufort, in France, about 1370, died at Winchester, April 11, 1447. He was the 2d son to John of Gaunt, duke of Lancaster, by Catherine Swyn-

ford, and was thus the brother of Henry IV., the uncle of Henry V., and the great uncle of Henry VI., kings of England. Educated at the 2 English universities and in Germany, he was early promoted from the bishopric of Lincoln to the wealthy see of Winchester, and when after the death of Henry V. he became the powerful rival of the duke of Gloucester in the council of regency, he had 8 times borne the high office of chancellor, had assisted at the council of Constance, and had made a pilgrimage to Jerusalem. The rivalry and strifes of the duke and cardinal are the most prominent feature in the history of England for many years. In 1429 the latter was appointed by the pope captain-general of the crusade against the Hussites of Bohemia, and having raised a force for this purpose in England, he betrayed the cause of the pope by acting only against the French. This conduct, however, added to his popularity in England, but in his absence, while attending the young king Henry VI. in France, where in the church of Notre Dame, at Paris, he placed the crown upon his head, an unsuccessful attempt was made by the duke of Gloucester to deprive him of his bishopric, and to destroy his power by bringing against him a series of charges in a meeting of peers. Taking part in the affairs of France, the cardinal exerted himself in vain to reconcile the dukes of Burgundy and Bedford. Of the 2 competitors by whose struggle for the supremacy the affairs of England were vexed, Gloucester was in 1447 arrested at Bury St. Edmund's, where he soon after died suddenly and mysteriously, not without suspicion of poison, and within 6 weeks he was followed to his grave by Beaufort, who died with a lingering sickness. The drama of Shakespeare reflects the public sentiment of the time, which was unfavorable to the cardinal. The hospital of St. Cross at Winchester, which still remains, was liberally founded by the provisions of his will.

BEAUFORT, HENRI ERNEST GROUT, chevalier de, a French traveller, born Feb. 25, 1798, at Aubevoye, department of Eure, died Sept. 3, 1825. He attempted to continue the exploration so boldly commenced in Africa by Mungo Park, and prosecuted under the auspices of the African association. In 1824 he visited the Gambia, Bakel, Bondoo, and Kaarta; in 1825 he went as far as the Kasso, the cataracts of Felou and Gavina, and the Bambook, gathering important information, and drawing sagacious conclusions from facts he had observed. Unfortunately death overtook him before he had reached Timbuctoo.

BEAUFORT, MARGARET, countess of Richmond and of Derby, a patroness of learning in England, born at Bletahoe, in 1441, died in 1509. She was of royal descent, and was married to the earl of Richmond, half-brother to Henry VI., by whom at the age of 18 years she had one son, who was afterward king of England, under the title of Henry VII. After the death of the earl of Richmond, she married

successively Sir Henry Stafford, and Thomas Lord Stanley, but had issue by neither of these marriages. She was celebrated for her devotion and charity. By her bounty, 2 colleges, Christ's and St. John's, were endowed at Cambridge, and a professorship of divinity established in each. She often declared that if the princes of Christendom should undertake a new crusade against the Turks, she herself would follow the army. She was the author of the "Mirroire of Golde to the Sinfull Soul," translated from a French translation of the *Speculum Aureum Peccatorum*, and of a translation of the 4th book of the "Imitation of Christ."

BEAUGENOCY, an old town of France, department of Loire, 16 miles S. W. of Orleans, on the right bank of the Loire, pop. in 1856, 5,072. In 1152 a council was held here which divorced King Louis VII. from Eleanor of Aquitaine, who was soon to become the wife of Henry Plantagenet, then heir apparent of the crown of England. Beaugency was formerly surrounded by walls, flanked with towers and bastions, and protected by a powerful castle. Of all this little now remains.

BEAUHARNAIS, ALEXANDRE, vicomte de, a French general, born in 1760, in the island of Martinique, died June 23, 1794, on the scaffold. He was major in a regiment of infantry when he married Josephine Tascher de la Pagerie, who was to become after his death the wife of Bonaparte. He distinguished himself in the American war, under the command of Count Rochambeau. In 1789 he was elected deputy to the states-general by the nobles of Blois, and was among the first of his order who joined the *tiers-état*. He was twice president of the national assembly. He occupied the chair when the flight of Louis XVI. was made known: "Gentlemen," he said, in a dignified and quiet manner, "the king left Paris last night; let us take up the order of the day." A little later he joined, as a division-general, the army of Custine, on the Rhine. Mentz was besieged by the allies, and might have been delivered by a bold movement; but Beauharnais remained inactive for 15 days, and the city surrendered. Being arraigned before the revolutionary tribunal, he was sentenced to death and beheaded when only 34 years of age.

BEAUHARNAIS, EUGÈNE DE, duke of Leuchtenberg, viceroy of Italy, born in Paris, Sept. 3, 1781, died in Munich, Feb. 21, 1824. He was the son of Viscount Alexandre Beauharnais by Josephine Tascher de la Pagerie, afterward empress of France. When his father was executed for having failed to rescue Mentz, he was not yet 18 years old; and nevertheless went to Brittany in order to serve there under Gen. Hoche, who had been his father's friend. In 1795 he went back to Paris, and called on Gen. Bonaparte, then the commander of the metropolis, to obtain from him the return of his father's sword, which had been taken away on the disarming of the sections subsequent to

the 18th Vendemiaire. Bonaparte at once granted his request, and soon received the visit of Madame Beauharnais, who was desirous to give her thanks to the general. At this interview the lady made a deep impression upon the heart of the general, and a few months later, March 8, 1796, was married to him, on the eve of his taking his departure for Italy, where he was to assume the command of the French army. Young Eugène remained at Paris to pursue his education; but toward the end of 1797, being appointed second lieutenant, he started for Italy. On the peace of Campo Formio, he was commissioned to receive the submission of the Ionian islands. On his way back to the army he passed through Rome, and was in that city when a sedition broke out against the French, during which Gen. Duphot was killed. Eugène displayed great courage in quelling the *émeute*, and rescuing the body of the unfortunate commander. In 1798 he followed his father-in-law to Egypt, where he distinguished himself in several encounters; he was severely wounded under the walls of Acre. He returned to France with Bonaparte, was appointed to a captaincy in the consular guards, and after the battle of Marengo promoted to the rank of major. On the establishment of the empire, he became a prince and colonel-general of the chasseurs; in 1805 state arch-chancellor, grand officer of the legion of honor, and viceroy of Italy, which government he kept until 1814. After the treaty of Presburg, he married Augusta Amelia, daughter of the king of Bavaria, on which occasion Napoleon invested him with the title of prince of Venice, proclaimed him "his adopted son, and heir-apparent to the crown of Italy." On his taking the reins of government, Eugène was only 24, but showed at once great prudence and discretion, taking advice from the most experienced, and selecting the most competent for the various offices. Improvements were introduced in all branches of the administration. The Italian army was reinforced, and soon ranked among the best troops of the great empire; the fortresses and the coasts were put in a state of defence; uniform laws promulgated; facilities for public education increased; beggary suppressed by the establishment of asylums for the poor; and the cathedral of Milan completed. All this was accomplished without any addition to the taxes; never were the fiscal charges so moderate, and yet, in 1818, the public treasury had a surplus of 92,000,000 livres, Italian. Italy had enjoyed 8 years of tranquillity and prosperity under the wise administration of the viceroy, when the fourth Austrian war broke out, and Eugène with scarcely 60,000 soldiers had to oppose an army of 100,000 under Archduke John. Being constrained at first to concentrate his troops behind the Tagliamento, he was defeated in the battle of Sacile, April 16, 1809; but soon took his revenge on the banks of the Piave, where he inflicted on the Austrians a loss of 10,000 soldiers and 15 pieces of cannon.

Eugène pursued them into Carinthia, defeated them in several encounters, and joined the great French army in the plains of Austria. Then, by order of the emperor, he invaded Hungary, and gained, June 14, near Raab, a bloody victory over Archduke John, whose army was by one-third stronger than his own. Three weeks later, he took an important part in the gigantic battle of Wagram. The glory he had acquired, and the partiality of Napoleon toward him, had excited jealousy among some members of the imperial family; and intrigues produced some coldness between the adopted son and the father-in-law. It was the time, moreover, when, yielding to political motives, Napoleon began to think of divorcing Josephine. This was one of the saddest periods in the life of Eugène, who adored his mother as much as he respected Napoleon. Notwithstanding all his entreaties, the divorce took place; and to make the cup more bitter to the lips of Eugène, he was obliged, as state arch-chancellor, to announce the event to the senate. In 1812 he commanded the 4th corps of the tremendous army which invaded Russia, greatly contributed to the victory on the Beresina, by holding possession of the redoubt of Borodino, which he had stormed twice, by superhuman efforts. During the awful retreat, in which more than 200,000 French soldiers perished, no one among the generals of Napoleon displayed so much self-possession, firmness, and intrepidity as Prince Eugène; when all were despairing he maintained an invincible constancy; and what little could be preserved from the ruins of the army, was saved by his unwearied exertions. Napoleon had intrusted Murat, king of Naples, with the command of the retreating forces; but he abandoned the forlorn undertaking, and Eugène alone was bold enough to continue and bring back the miserable remnants of the grand army. The retreat he conducted from Poznan to Leipsic has been considered by competent judges as one of the most extraordinary war operations on record. When speaking of that disastrous campaign, Napoleon more than once said: "Every one of us committed faults and blunders; Eugène alone committed none." He had at last gathered the remaining forces behind the Elbe; thus giving time to Napoleon for preparing his last resources. Before leaving the army he contributed much to the victory of Lutzen. Then he repaired to Italy, where his presence was called for. In less than 8 months a new army, amounting to 50,000 soldiers, was organized; all the fortresses were prepared for defence. He took such advantageous positions in the mountains of Carinthia and Carniola, that he would have preserved Italy, if it had not been for the defection of Bavaria. The Austrians were permitted to enter by the Tyrolese passes, and Eugène had to fall back on the Adige. There he held his ground for 8 months against the Austrians; but meanwhile the king of Naples had sided with the enemies of his brother-in-law and benefactor.

In January, 1814, 30,000 Neapolitans, aided by 10,000 English and Austrians, invaded upper Italy. Eugène fell back on the Mincio, and triumphed once more over the Austrians on Feb. 8; but all his exertions were of no avail, the great empire was crumbling. When all hope was gone, Eugène at last left Italy, and retired to the court of his father-in-law. There he received, with the principality of Eichstätt, the titles of duke of Leuchtenberg and first peer of the kingdom. He thenceforth devoted himself to the task of bringing up his children, and was 9 years later suddenly carried away by an apoplectic fit. Prince Eugène left by his wife, the princess of Bavaria, 2 sons, and 4 daughters. The eldest among the latter, Josephine, is the queen of Oscar of Sweden; the next, Eugénie Hortense, married to the prince of Hohenzollern-Hechingen; and the third, Amalia Auguste, widow of Don Pedro I., is now empress-dowager of Brazil and duchess of Braganza. Of the 2 sons, the elder, Auguste Charles, the husband of queen Donna Maria, of Portugal, died March 28, 1885; and the younger, Maximilian Joseph, who had, in 1842, married the grand duchess Maria, daughter of Czar Nicholas I., died Dec. 6, 1862.

BEAUHARNAIS, FRANÇOIS, marquis de, born Aug. 12, 1756, at La Rochelle, died in 1828. He was the brother of Alexandre, and was also sent to the states-general. He was an unflinching royalist, and in 1792, he framed a plan for the flight of the royal family; but having failed in his attempt, he left France and joined the army under the prince of Condé, in which he was appointed major-general. After the 18th Brumaire, he sent to his sister-in-law, Josephine, a missive, to be delivered into the hands of Bonaparte, in which he requested him, "in the name of the only glory he had yet to gain, to restore the crown of France to the Bourbons." He was, however, recalled to France on the occasion of his daughter's marriage with M. de Lavalette, and appointed director-general of the post-office, then ambassador to Etruria and to Spain; but Napoleon being soon dissatisfied with his services in that capacity, he was recalled.

BEAUHARNAIS, HORTENSE EUGENIE, wife of Louis Bonaparte, and queen of Holland, born at Paris, April 10, 1788, died at Arenenberg, Switzerland, Oct. 8, 1887. She was the daughter of Alexandre Beauharnais and Josephine, afterward wife of Napoleon. She was to have married Desaix; but on Jan. 7, 1802, in compliance with the wish of Napoleon, she became the wife of Louis, who also gave up a former attachment for the marriage. The union was not a happy one; and Hortense returned to Paris, and lived a dissolute life there apart from her husband. Prominent among her lovers was the comte de Flahaut, for whom she composed her popular air, *Partant pour la Syrie*, as he was leaving Paris for Germany, and Admiral Veruel, a Dutch naval officer. The former is believed to have been the father of M. de Mor-

ny, universally recognized as the illegitimate half-brother of Napoleon III., whom he greatly aided in becoming emperor; and to the latter is attributed the paternity of Napoleon III. himself. It is known that Louis Bonaparte had a warm dispute with his brother, the emperor, touching this child, which he averred to be none of his, and that his unwillingness to recognize it as such was only overcome by the most decided measures on the part of Napoleon. After the separation of Napoleon and Josephine, Hortense remained on intimate terms with the former. When the Bourbons came back in 1814, she alone of all the Bonaparte family remained in Paris. After the Hundred Days, she lived in Augsburg, in Italy, and in Switzerland, devoted to her sons, and greatly beloved by the people with whom she came in contact, who found her a kind and gentle benefactress. When her sons had to flee, after participating in an unsuccessful attempt at revolution, in Italy, in 1831, she went for a time to Paris, and was kindly received by Louis Philippe. She possessed much literary, as well as social talent. Of her 4 acknowledged children, only Napoleon III. and M. de Morny now survive.

BEAUHARNAIS, MARIE ANNE FRANÇOISE MOUCHARD, better known as Fanny, comtesse de, a literary woman, born at Paris, in 1738, died July 2, 1813. She married, when still very young, the Count Beauharnais, uncle to Alexandre and François, but soon separated from her husband, and retired into a nunnery, whence she emerged, after the revolution, to lead a very free life at Paris, where, after the divorce of her relative, the empress Josephine, she fell into obscurity. She wrote some miscellaneous poems, a novel, and several comedies, which are now forgotten. Notwithstanding her kindness and benevolence, she was sometimes bitterly criticized; and it was to her Lebrun alluded, in his pungent epigram:

Egée, belle et poète, a deux petits travers:
Elle fait son visage, et ne fait point ses vers.

She was, indeed, charged with signing her name to poems which were written by her lovers.

BEAUHARNOIS, a county in the S. W. extremity of Canada East, extending to the St. Lawrence on the N. W., and from New York state on the south. It has an area of 717 sq. miles. This surface is drained by the Chateaugay river and several minor streams, and produces oats and abundant pasturage for sheep and cows. Butter is the principal product. Pop. 40,213. The chief towns are Huntingdon and Beauharnois. The latter is a post village situated on lake St. Louis, formed by the St. Lawrence, 33 miles S. W. of Montreal; pop. in 1851, 800.

BEAUJOLAIS, a district of France, in the ancient province of Lyonnais, forming now the northern part of the department of Rhone, and a small part of that of Loire. It belonged for a long while to the ducal house of Bourbon, was confiscated in 1522 from the great constable of Bourbon, and united to the crown by Francis I.;

it was afterward given back, in 1560, to a nephew of the constable, and in 1628 came, by marriage, to the house of Orleans, where it remained until the revolution. Its name is preserved now by an excellent wine which is produced on its hills, *Vin de Beaujolais*.

BEAULIEU, or **EXE**, a parish of Hants, England, at the mouth of the river of the same name. It contains the ruins of an abbey founded by King John, and memorable for having afforded refuge to Margaret of Anjou and to Perkin Warbeck. Within the limits of the manor of Beaulieu, exemption from arrest for debt is still enjoyed.

BEAULIEU, CAMUS DE VERNET, a favorite of King Charles VII., of France, died in 1427. When M. de Giac, a former favorite of the king, was murdered by order of the constable, Artus of Richemont, Beaulieu was put in the place of the murdered man, appointed at once commander of the castle of Poitiers, where the king resided, first equerry and grand master of the horse, with full control over the finances. But Richemont, dissatisfied with his conduct, sent four or five soldiers, who summarily despatched him while he was enjoying a ride around the castle. Charles VII., very little moved by this not unusual accident, received another favorite from the constable.

BEAULIEU, JEAN PIERRE, baron, an Austrian general, born in 1725, at Namur, Belgium, died in 1819, at Lintz. He first served during the 7 years' war; being afterward promoted to the rank of major-general, he was put in command of the troops sent against the rebellious Brabantina, whom he soon conquered by his humanity no less than his courage and skilful measures. In 1792 he fought against the French troops, who had invaded Belgium, and defeated them in several encounters, especially at Arlon. In 1796 he was sent to Italy, against Bonaparte; the veteran was mercilessly routed by his young rival at Montenotte, Fombio, and Lodi; then repulsed, with the fragments of his army, over the Oglio, the Mincio, and the Adige into Tyrol, where, June 25, 1796, he resigned his command, which was given to Wurmser, and retired to private life.

BEAUMANOIR, JEAN, sire de, a celebrated French knight, born in Brittany, lived about the middle of the 14th century. He was the countryman and companion-at-arms of the illustrious Du Guesclin, and like his friend, distinguished himself in the civil wars of Brittany, when John, count of Montfort, supported by the English, and Charles of Blois, aided by the king of France, contended for the possession of that duchy. But he owes all his celebrity to that terrible encounter known as the *combat des trente*. He then had the command of the castle of Josselin; and being enraged at the depredations committed by Bemborough, the English commander at Ploermel, he challenged him to fight. It was, therefore, agreed that thirty knights of each party should meet, March 27, 1351, at a place between the two castles known

as Midway Oak. On the announcement of the coming battle, crowds of people flocked together from all the surrounding country. The two chiefs presented themselves at the head of their best soldiers, and the fight commenced in earnest. On the first onset the English excelled their adversaries; but Bemborough having been killed, the French renewed the struggle with redoubled courage, and finally won the victory. This was one of the most heroic exploits of the time, and gained such a popularity that, more than a hundred years later, when speaking of a hard contested battle, it was usual to say: "There was never such hard fighting since the battle of the thirty!" At the battle of Auray, in 1364, Beaumanoir was taken prisoner as well as Du Guesclin.

BEAUMANOIR, PHILIPPE DE, an eminent French jurist, born in Picardy, about the beginning of the 13th century, died in 1296. He belonged to the middle class, which was then gaining ground by its alliance with royalty, and filled some minor offices in the administration of law. In 1280 he was bailiff of Clermont, in Beauvaisis, which town was in the hands of Robert, the fifth son of Louis IX. and the head of the Bourbon family. It was according to directions from this prince that he digested and committed to writing the traditional law regulations of the country. This book, *La Coutume de Beauvoisis*, is one of the most valuable monuments of French law during the middle ages. It greatly contributed to reforming the excesses of the feudal system, and enforcing the paramount power of the monarch. It is highly esteemed, and frequently referred to by modern historians, jurists, and archæologists. It has recently been republished by order of the minister of public instruction in France.

BEAUMARCHAIS, PIERRE AUGUSTIN CARON DE, a French dramatic writer of great originality, still more remarkable for his eccentricities of life, changes of fortune, and elasticity of mind, born Jan. 24, 1732, at Paris, died May 19, 1799. He was the son of a watchmaker, and after receiving a slight education at a private school, he was brought up to the trade of his father; but, being very fond of music and social pleasure, he paid little attention to it, so that his father, a very kind-hearted man, thought it necessary to expel him from his house, though meanwhile affording him assistance secretly. They were soon reconciled, and young Caron, ambitious to make amends for his previous conduct, took to the trade with such earnestness that he made considerable progress, and even invented a valuable improvement in the making of watches. This being contested by Lepaute, then a very celebrated watchmaker, the litigation was submitted for decision to the academy of science, who rendered a verdict in favor of the young competitor, which success caused him to be appointed watchmaker to the king. In this capacity he had access to court, where he was remarked for his handsome figure and lively countenance. To these he was soon

indebted for an office in the royal household, and then for his marriage with a widow in good circumstances. His wife died, and Beaumarchais would have been reduced to poverty if it had not been for his talent as a musician. Being a skilful player on the harp and the guitar, he was asked to play before the daughters of Louis XV., and was soon admitted to their concerts and parties, the direction of which was intrusted to his care. Such favor, although bringing no pecuniary profit, excited envy, but eventually became the cause of his fortune. Through his influence with the princesses he was enabled to be of some service to the great financier, Paris Duverney, who, by way of reward, took him as his partner in some transactions, by which the young man gained large sums of money. Part of his profits were applied to buying an office in the royal hunting establishment, which he held for 22 years. But this did not interfere with his commercial or financial speculations. In 1764 we find him at Madrid trying to enter into some contracts with the Spanish government, but above all engaged in protecting his younger sister, who had been ill-treated by a Spanish gentleman named Olavijo. By his firmness, self-possession, industry, and adroit management, he fully vindicated his sister's honor, causing Olavijo to be shamefully dismissed from the office he held at the Spanish court. Some 3 years after his return to France, Beaumarchais produced a drama entitled *Eugénie*, the plot of which was founded on that adventure. It had a successful run, and was, under the title of the "School for Rakes," adapted for the stage at Drury Lane, then under the management of Garrick. In 1770 8 misfortunes befell Beaumarchais: his 2d drama, *Les deux amis*, proved a complete failure; he lost his 2d wife, who had brought him a large fortune, and was, consequently, deprived of the larger part of his income; lastly, his old friend and partner, Duverney, died. This last event gave rise to lawsuits which lasted more than 7 years, and involved in the issue not only the fortune of Beaumarchais, but his honor. The heir of the financier, the count de Lablache, impelled by hatred, declared an agreement by which Beaumarchais was the creditor of Duverney to be fraudulent, and sued him as indebted to the succession for a large balance. Beaumarchais first gained his cause; but, upon an appeal, it was adjudged against him, so that he was, by implication, pronounced a forger. At the same time, from a motive totally foreign to the trial, he was unlawfully detained in prison for more than 2 months. Any one else would have been irretrievably lost, but, with unconquerable fortitude, he reentered the lists, not only against his old opponent, the count de Lablache, but against the judge, Goezman, who, by his unfavorable report, had procured the reversal of the first judgment. This last lawsuit soon became paramount. The parliament, of which Goezman was a member, being very unpopular, Beaumarchais made use of the occasion, and so

skillfully managed his defence, that he enlisted the public in his interest. It seemed, indeed, as if he was pleading, not his own, but everybody's cause; in fact, this individual lawsuit became a struggle between the people, as represented by one of them assuming, for the first time in France, the title of citizen, and the hated parliament, or, rather, the old order of things, which was assaulted and battered down with all the weapons ingenuity, boldness, and wit could furnish. The memorials of Beaumarchais were indeed masterpieces of pungent eloquence, and, although worsted by his opponent in the point of law, he succeeded in coming off victorious in the eyes of the public. Meanwhile he had won one of his brightest triumphs as a dramatist. *Le Barbier de Séville* was performed in 1775, and the liveliness and comic power of the play were in perfect contrast with the sad dulness of his former dramas. Owing to some secret service he had done to the king, he was soon relieved from the incapacity resulting from the judgment rendered against him; his great lawsuit was submitted to a supreme court, and, on July 21, 1778, he definitively gained his cause. He was then the most popular man in France, and, at the same time, on the very best terms with the government. This he made use of to accomplish a great undertaking he had been pursuing for the 3 preceding years. As early as 1775 he had submitted to the king a memorial in which he insisted upon the necessity for the French government to come secretly to the assistance of the English colonies of America against England, giving as his deliberate opinion that they would prove unconquerable. Beaumarchais passed a part of the year 1775 in England as an agent of the French ministry; had interviews with Arthur Lee, and was in the most intimate relations of correspondence with Vergennes. His secrecy, his sagacity in interpreting a hint from a minister without forcing him to commit himself even verbally, his quickness of perception and his social attractions, made him a convenient instrument. His papers served to fix the wavering purpose of the king, and when Maurepas, the chief minister, hesitated about espousing the cause of the insurgent Americans, Beaumarchais, by letters, representations, and adroit flattery, assisted to bring him to the decision, which his own love of ease would have shunned. The French cabinet ostensibly professed to decline sending any assistance, but they consented to help Beaumarchais in his plan to furnish the colonies with arms and ammunition. For that purpose they had secretly advanced to him 1,000,000 livres, an equal sum being furnished by Spain, and delivered to him arms and ammunition from the public arsenals, on the condition that he would pay for or replace the same. Beaumarchais, under the firm of Roderique Hortalez and Co., as early as the beginning of 1777, forwarded 3 of his own ships, carrying 200 pieces of ordnance, 25,000 muskets, 200,000 lbs. of gunpowder, and other ammunition. He had also

engaged more than 50 officers, who sailed on board the *Amphitrite*, his largest ship; and among the number were La Rouerie, Pulaski, and Stenben, who so powerfully aided in the success of the American troops. This first fleet safely arrived at Portsmouth, and inspired the colonists with renewed hope. Several other ships were sent during the same year, and about the month of September Beaumarchais's disbursements amounted to more than 5,000,000 francs. Congress, being under the impression that these supplies were gratuitously furnished by the French government, under a disguised form, neglected to make remittances to Beaumarchais, who found himself in embarrassed circumstances, from which he was relieved by the French government advancing him another million of francs. The forwarding of supplies was continued, and toward the beginning of 1779, no less than 10 vessels sailed at once, but few of them reached their destination. At that time the United States were indebted to Roderique Hortalez and Co., or, rather, Beaumarchais, to the amount of more than 4,000,000 francs. Although congress did not hesitate to acknowledge its obligations toward the French firm, the settlement of so large indebtedment met with many difficulties, and it was not till 1835 that the final balance of about 800,000 francs was paid to the heirs of Beaumarchais. The transaction, far from having been profitable to the latter, as it has been frequently asserted, resulted in losses, which he was enabled to withstand through government aid and some more successful speculations of various kinds. One of the largest, which, however, ended by being disadvantageous, was the first complete edition of Voltaire's works, known as the "Kehl edition." Amid all the bustle of commercial affairs, Beaumarchais did not neglect literature, and, in 1784, he came out with the most celebrated of his plays, *Le Mariage de Figaro*. "To write this piece," a biographer says, "was certainly a difficult task; but to have it performed was a thing which would have been impossible to any one but Beaumarchais." Louis XVI. had emphatically decided that it should never be performed under his reign; and, nevertheless, the performance took place 6 months later. It was certainly one of the most striking events among the forerunners of the French revolution. The eagerness to see the play was unprecedented, and such was the anxiety to be present at the first representation that thousands of persons thronged to the entrance of the theatre from the early morning. Ladies of the highest rank passed the day and dined in the private boxes of actresses, to secure their seats, and 2 men were smothered in the rush at the opening of the doors. Words are inadequate to express the public rapture, and the piece had to be performed for 2 years in succession. The first 67 representations brought to the theatre 846,197 francs, which netted 298,755 francs clear profit, out of which Beaumarchais received 41,499. This was a trifle for a man who was engaged in

immense speculations, such as the establishment of a bank of discount, nearly on the plan of the bank of England, and the supply of water to the inhabitants of Paris, for which he was virulently abused by Mirabeau, who was then a zealous pamphleteer. In 1787 he was again entangled in a lawsuit, when he had as his opponent Bergasse, a dashing young lawyer from Lyons; but his cause was devoid of interest, and apparently not very creditable to his morality, and while he was successful before the court he lost it before the public. In 1793 his last drama, *La Mère coupable*, was performed. During the reign of terror, being anxious to give evidence of his patriotism, he bought some 60,000 muskets in Holland for the French republic, but, through some mismanagement, they were not delivered in time, and Beaumarchais was charged with the intention of selling them to the *émigrés*. He thought it prudent not to wait for a trial, and went to England, from whence he sent an apologetical memoir, entitled *Mes six époques*. He, however, returned to his native country, and was committed to prison. His life was saved by Manuel. He continued in obscurity during the directory, and died suddenly in the 68th year of his age. His complete works were published (Paris, 1809, 7 vols. 8vo) by his friend, Gudin de la Brenellerie, who left interesting MSS. upon his life. Another edition was brought out by Fevine (Paris, 1827, 6 vols. 8vo), with a biographical notice by St. Marc Girardin. A very full and able memoir of his life, by M. de Loménie, published in 1857, under the title of *Beaumarchais et son temps*, has been translated into English and reprinted in this country.

BEAUMARIS, a seaport town of North Wales, island of Anglesea, near the northern entrance of the Menai strait, a few miles from the Menai bridge. It has the ruins of a castle built by Edward I. in 1298.

BEAUMELLE, LAURENT ANGLIVIEL DE LA, a French writer, known by the unrelenting enmity of Voltaire against him, born Jan. 28, 1726, at Vallerangue, department of Gard, died at Paris, Nov. 17, 1773. While at Berlin, he was introduced to Voltaire, whose pride he deeply wounded by a remark in one of his books called *Mes pensées*. Returning to France, he was arrested at Voltaire's instigation, and confined for 6 months in the Bastille. Restored to liberty, he wrote a very witty pamphlet in answer to an attack directed against him by Voltaire during his captivity; and then devoted all his time to the composition of his *Mémoires pour servir à l'histoire de Madame de Maintenon*, which was received with marked favor; but when he was about availing himself of his success, he was arrested a second time, and confined again for more than a year in the state prison. In 1764 he married a young lady who was possessed of some property, and he had the hope of quietly living on her estate; when suddenly Voltaire's renewed hostility called him again into the literary arena. During this

new contest, La Beaumelle displayed such tact, energy, and wit, that he sometimes got the better of his powerful rival. At last, in 1770, he obtained permission to return to Paris, receiving, moreover, an appointment as assistant in the royal library, and afterward a pension. —His son, VICTOR LAURENT SUZANNE MOISE, born in France in 1772, died at Rio Janeiro in 1831, served as colonel of engineers in the army of the emperor Don Pedro, and published an interesting pamphlet on the Brazilian empire.

BEAUMETZ, BON ALBERT BRIENS DE, a member of the French constituent assembly, born Dec. 24, 1759, at Arras, died at Calcutta about 1809. He greatly contributed to reform the old laws, and insisted upon the establishment of trial by jury. He was elected president of the national assembly, May 27, 1790. On the adjournment of that body, he was appointed member of the departmental directory at Paris. In 1792, being charged with attempting to restore the monarchical government, he emigrated, wandering through Germany, England, the United States, and at last went to the East Indies, where he died. According to another report, he was permitted to return to France after the 18th Brumaire, and breathed his last a few months after arriving in his native country. He was the author of a valuable book entitled, *Code pénal des jurés de la haute cour nationale*, Paris, 1792.

BEAUMONT, a post village on the Neches river, and the capital of Jefferson co., Texas. The surrounding prairies are filled with herds of cattle and horses, the raising of which is the principal occupation of the inhabitants of Beaumont. Small vessels ply regularly between this port and Galveston.

BEAUMONT, CHRISTOPHE DE, archbishop of Paris, born July 26, 1703, in Périgord, died Dec. 12, 1781, at Paris. He is known by his severity toward the Jansenists, whom he wished to subject to the famous bull *Unigenitus*; but especially by his quarrels with the philosophers of his time. J. J. Rousseau addressed to him a letter, which is thought to be very eloquent. The archbishop was disowned by the government, and exiled, while the ministry insisted on his resignation, but he refused. His somewhat fiery zeal for religion did not exclude true kindness and charity; he not only forgave offences, but sometimes relieved his enemies from their troubles. He was held in great esteem by several sovereigns of Europe, and admired by Frederic the Great of Prussia, who offered him an asylum in his kingdom. He was buried in the church of Notre-Dame.

BEAUMONT, FÉLIX BELLATOR, comte de, a member of the imperial senate in France, born Dec. 25, 1793, at Paris. He first served in the army, was in the Russian campaign, was taken prisoner at Dresden, and liberated in 1815. He was present at the disastrous battle of Waterloo, served a few years under the Bourbons, and was discharged in 1826.

After leading, for 9 years, a private life, employed in agricultural pursuits, he was sent to the chamber of deputies, where he took his seat in the opposition; he was reelected in 1842 and 1846. He was also a member of the constituent assembly in 1848, and of the legislature in 1849. His fortune, standing, and ability, as well as his political sentiments, commended him to Napoleon III., who appointed him senator Jan. 26, 1852.

BEAUMONT, FRANCIS, born at Grace Dieu, Leicestershire, in 1585, died in March, 1616; one of the most prominent of the old English dramatists, connected for some time in literary labor with John Fletcher, so that their plays are usually published under the joint names of Beaumont and Fletcher. Of the private life of Beaumont, very little is known. He was the 3d son of Francis Beaumont, judge of the court of common pleas in the time of Queen Elizabeth, and was for a short time at Oxford, whence he went to London, and studied law at the inner temple. When he was 16, he turned Ovid's *Salmacis and Hermaphroditus* into English rhyme, and before he was 19, had become an intimate friend of Ben Jonson. His connection, a kind of dramatic partnership, with Fletcher, appears to have lasted about 12 years. It is not possible to determine with strict accuracy to how many plays he contributed, but it is supposed by the best critics that out of 53 dramas, several of which are now lost, and which were published under the joint names of Beaumont and Fletcher, only 17 really were written in part by him. Like those of other dramatists of that age, his plays contain much of value, with many passages of great force and beauty. Except by scholars, they are now rarely read or referred to. He was buried in Westminster abbey.

BEAUMONT, SIR GEORGE HOWLAND, a munificent patron of art and an amateur of considerable merit, born at his family seat in Leicestershire, England, Nov. 6, 1753, and died Feb. 7, 1827. He received his education at Eton, and subsequently devoted himself with enthusiasm to the study of painting and to the collection of works of art. His landscapes, although deficient in practical skill, are frequently well imagined, and the figures and other accessories skilfully disposed. As a friend and patron of artists, in whose society he took much delight, his claims to consideration are numerous. He was among the first to discover and encourage the genius of Wilkie, some of whose finest works were painted for him, and his gallery contained, beside many choice works of the old masters, fine specimens of the best modern English painters. He was also instrumental in establishing the British national gallery, and as an inducement to parliament to purchase the celebrated Angerstein collection for that purpose, offered to present 16 of his best pictures to the collection. The offer was accepted, and this munificent gift is now one of the most at-

tractive features of the gallery. Beaumont was also an intimate friend of Wordsworth.

BEAUMONT, J. T. G. LÉPRÉVÔT DE, born in Normandy, lived during the last part of the 18th century, became known by discovering the plot called the *pacte de famine*, the object of which was a monopoly of bread during the reigns of Louis XV. and Louis XVI. A lengthened captivity was the reward of his efforts to unravel this mystery. Being made aware in 1768 of a compact by which a private company had received from the government the right of starving the country, he wrote a strong denunciation to be sent to the parliament of Rouen, which had just made complaints about monopolies; but, by some indiscretion, the document was made known to the minister of police, who had Beaumont immediately arrested and incarcerated in the Bastille, where he was kept for 11 months; then he was transferred to various prisons, his captivity lasting no less than 21 years. He was liberated Sept. 5, 1789, 2 months after the taking of the Bastille.

BEAUMONT, SIR JOHN, English poet, born in 1582, died in 1628. He was elder brother of Francis Beaumont, the dramatist, and published a small volume of poems, remarkable for its high moral tone. He also wrote a poem called "The Crown of Thorns," in 8 books, which is lost. Winstanley, in his "Honor of Parnassus," describes Sir John Beaumont as one of "the great souls of numbers."

BEAUMONT, WILLIAM, a surgeon in the U. S. army, born in 1796, and died at St. Louis, April 25, 1853. He is principally noted for his discoveries regarding the laws of digestion and for his experiments upon the body of Alexis St. Martin. In 1822 Beaumont was stationed at Michillimackinac, Michigan. On June 6, St. Martin, a young man 18 years of age, in the service of the American fur company, was accidentally shot, receiving the whole charge of a musket in his left side, from a distance of about one yard, carrying with it portions of his clothing, and fracturing two ribs, lacerating the lungs, and entering the stomach. Notwithstanding the severity of the wound, Dr. Beaumont undertook his cure, and by careful and constant treatment and attention, the following year found him enjoying good health with his former strength and spirits. In 1825 Dr. Beaumont commenced a series of experiments upon the stomach of St. Martin, showing its operations, secretions, the action of the gastric juices, &c.; these experiments he was obliged to discontinue after a few months, but renewed them at various intervals until his death; his patient during so many years presenting the remarkable spectacle of a man enjoying good health, appetite, and spirits, with an aperture opening into his stomach $2\frac{1}{2}$ inches in circumference, through which the whole action of the stomach might be observed. The result of his experiments was published by Dr. Beaumont in 1833, and has been recognized throughout the medical world as a valuable addition to sci-

ence. St. Martin is still living, having visited Europe in 1857.

BEAUMONT DE LA BONNIÈRE, GUSTAVE AUGUSTE DE, a French advocate and writer, born Feb. 6, 1802, in the department of Sarthe. In 1831 he was commissioned, with Alexis de Tocqueville, to visit the United States in order to make inquiry about the penitentiary system established here; and the result of their voyage was a report which has become a standard work on the subject, *Du système pénitentiaire aux États Unis et de son application en France*. Beside this work, while De Tocqueville published his *Démocratie aux États Unis*, Beaumont produced a kind of novel, *Maria, ou de l'esclavage aux États Unis*, which has been translated and reprinted in this country. In 1839, another book from his pen, *L'Irlande politique, sociale et religieuse*, commanded public attention, and was rewarded, as well as the preceding one, with the Monthyon prize of the French institute. In 1840, Beaumont was elected to the chamber of deputies, sided with those members forming the so-called dynastic opposition, and favored electoral reform in 1847. Being sent to the constituent assembly in 1848, he was a member of the committee on foreign affairs. Gen. Cavaignac appointed him ambassador to England. He was reelected to the legislative assembly, where he did not play a conspicuous part, and since the *coup d'état* of December, 1851, he has been in retirement. In 1836 he married a granddaughter of Gen. Lafayette.

BEAUMONT DE LA BONNIÈRE, MARC ANTOINE, comte de, a French general, born Sept. 23, 1760, in the vicinity of Tours, died Feb. 4, 1830. He entered the service as a captain in 1784. Being a colonel in 1792, he opposed the fury of the revolutionists at Lyons, was arrested and sentenced to death; but his regiment, which had become very much attached to him, rescued him at the moment he was taken to the scaffold. He afterward served with distinction in Italy and Germany. Napoleon I. made him a senator in 1807, and a count of the empire in 1808. Still he was among the first to join the Bourbons, and was promoted to the peerage by Louis XVIII., to whom he remained faithful.

BEAUNE, a town of France, department of Côte d'Or, 20 miles S. S. W. of Dijon, in a fine country, at the foot of a hill which produces excellent wine; pop. in 1856, 10,458. Its most remarkable public buildings are the church of Notre Dame and the hospital founded in 1444. Its ramparts, beautifully planted, afford fine promenades. Previously to the revocation of the edict of Nantes, Beaune was among the leading manufacturing cities of eastern France; it still produces cloth, cutlery, leather, vinegar, casks, &c., but its actual importance is mostly derived from its wine trade, which is quite considerable. The vineyards by which it is surrounded yield a large quantity of wine, which is considered the best of the second growths of Burgundy. The mathematician Monge was born here.

BEAUNOIR, whose real name was ROBINEAU, ALEXANDRE LOUIS BERTRAND, a French dramatist, born April 4, 1746, at Paris, died Aug. 5, 1823. He was a witty, graphic, and original writer, and produced no less than 200 plays, by which he made more than 800,000 crowns. During the revolution, Beaunoir emigrated to Belgium, then to Russia, where Paul I. intrusted him with the direction of the imperial theatre. In 1801 he returned to France.

BEAUPRÉAU, a town of France, department of Maine et Loire, 26 miles S. W. of Angers, on the Erve. It has manufactories of linen, woollen mills, dye works, and tanneries; but is particularly known by the bloody battle which was fought under its walls, April 2, 1793, between the Vendéans and the republicans, under Gen. Ligonier. The latter were defeated. Pop. 3,790.

BEAUSOBRE, ISAAC DE, a French Calvinist divine, born March 8, 1659, at Niort, died June 6, 1738, at Berlin. He received orders 2 years previous to the revocation of the edict of Nantes, and was appointed pastor at Châtillon-sur-Indre. On the closing of his church, he ran the risk of being imprisoned for holding secret religious meetings at his house, and was compelled to leave France. He took refuge at Rotterdam, and afterward went to Anhalt-Dessau, where he lived for nearly 7 years. In 1694 he returned to Berlin, and the elector Frederic William III. appointed him pastor of one of the French churches in that city. He soon after became chaplain to the queen of Prussia, and entered, in 1707, the consistory, where he held his seat for nearly 30 years. He was a scholar of uncommon attainments and a perspicuous writer.

BEAUSOLEIL, JEAN DU CHATELET, baron de, a Flemish mineralogist and alchemist, born in Brabant, about 1578, died in the Bastille, in 1645. He travelled over most of the countries of Europe, seeking mines by means of the divining-rod, the great compass, the seven-angles compass, the mineral astrolabe, the metallic rake, &c. He twice visited France, and was, on a charge of sorcery, dispossessed of all his jewels and instruments, and a little later confined in the Bastille, where he died. His wife shared his labors, and probably his fate.

BEAUTEMPS-BEAUPRÉ, CHARLES FRANÇOIS, an eminent French hydrographer, born in 1766, near Ste. Menchould, died in 1854. His whole life was devoted to hydrographic pursuits and to the drawing of maps and charts, which are highly esteemed for their accuracy. Among his works are the *Atlas de la mer Baltique*; *Carte hydrographique générale*; *Plan de l'Escaut*; and especially the *Atlas* accompanying the account of the voyage undertaken in 1791, by D'Entrecasteaux, in search of the unfortunate La Pérouse. This last work was only published in 1808; but a copy of the manuscript maps had fallen into the hands of the English, who used them in their explorations in the Pacific. He is called the father of hydrography, and was

chief hydrographer and keeper of the rich collection of maps and charts belonging to the French navy, beside being member of the Institute and of the *Bureau des Longitudes*.

BEAUTY, the quality of objects which gives delight to the æsthetic faculty. It is found in nature, in scenery, sounds, and forms, and is produced in art, in poetry, music, painting, sculpture, and architecture. To trace its development or manifestations would be to give a history of all the arts, and we purpose here only to treat the subject abstractly. From the time of Plato, beauty, truth, and goodness have been the categories which have occupied philosophy. Truth is the ideal or absolute in the domain of intellect, goodness in that of volition or action, and after centuries of earnest speculation, beauty has at length found its place as the ideal in the domain of sensibility. As æsthetics treats of the works of art which exhibit human passion, and of the law by which we love, pity, fear, sympathize, and wonder, so beauty, which is the theme of æsthetics, is the ultimate aim of the passions and sentiments. The divine purpose revealed to the intellect is truth, revealed in human life is virtue, and revealed to the heart is beauty.—In the philosophy of Plato, which contains the oldest important extant speculations on this subject, beauty is an archetypal idea proceeding from the infinite mind and imaged in material forms. It resides primarily in God and in the human soul, is a cardinal spiritual fact, and would remain a reality though matter were annihilated. Plato, indeed, affirmed the order of the universe to be a harmonious manifestation of beauty, yet he preferred to dwell upon and praise the idea, and proposed no theory of objective beauty, of the laws by which a beautiful idea becomes a beautiful object. Though he inaugurated the 3 categorical ideas, he yet did not nicely draw the distinction between our notions of the beautiful and of the good. The enthusiastic disciple of Socrates, he made the moral element everywhere dominant in his philosophy, yet his mind was so sensitively æsthetic that he affirmed that only the spectacle of eternal beauty could give worth to this mortal life. Swayed by a twofold love, he refrained from dialectic severity. Wishing to make both beauty and goodness supreme, and unable to set either above the other, he blended them into one, and called them by a common name which embraced both the words beautiful and good.—Aristotle has treated the subject briefly and from an objective stand-point, and unlike Plato, he links beauty not with goodness but with truth. According to him, that object is beautiful which is composed with such order and proportion that we can see its parts and embrace them all together. The same view was adopted and strikingly expressed by St. Augustine in his remark, that unity is the source of beauty, that that thing is beautiful whose central principle and organic relations we can perceive. Thus, as the Platonic theory made that beautiful which satisfies the moral nature, so the

Aristotelian affirmed beauty only in that which satisfies the intellect.—The theory of Plato was cherished in the school of Alexandria, where Plotinus stated it in an admirable treatise. Material beauty, he says, is but the reflection of spiritual beauty. Mind alone is beautiful, and in loving the beautiful it loves only the shadows of itself. But the theory of Aristotle, adopted by St. Augustine, and subsequently by Boethius, was received by those of the schoolmen who speculated of beauty. The 2 greatest masters of the scholastic method were the Dominican Thomas Aquinas, and the Franciscan Dun Scotus, and while the former of these and his disciples made intellect supreme, and the latter and his disciples made will supreme, there was found no third master to assert the claims of sentiment or beauty. Thus beauty, whose alliance, in ancient philosophy, had been sought by each of the other members of the triple sisterhood, was now forsaken and an outcast.—Nor was the discussion renewed till long after the revival of letters.—In Italy, where the sternest people of antiquity has been succeeded by the most sensitive of modern nations, the modern culture of the beautiful took its rise; and its first fruits were the poems of Dante and Petrarch, and many paintings as well as poems before the end of the 15th century. The love of beauty seemed a national instinct, universal among the populace, patronized by the wealth of princes, encouraged by the learning of academies. Yet the criticism and speculation upon the subject went far behind the improvement in taste and the delight in art. Reflection among the Italians has never been able to rival the activity and power of their imagination, and though their country is the nursery of all that is best in painting, sculpture, and music, they have contributed little that is important to the philosophy of the beautiful.—In France the questions which occupied Cartesianism were foreign to æsthetics, and only minds of a second order in that great school gratified themselves with reproducing the traditions of antiquity, and feebly restating the theory of Aristotle and St. Augustine. Thus Crousaz made the beautiful to consist in 5 elements, order, regularity, proportion, unity, and variety, and André distinguished it into various degrees and sorts from the various combinations of these sources. The Père Buffier advanced the curious theory, which was afterward adopted by Sir Joshua Reynolds, that beauty consists in mediocrity, and that things are beautiful just in proportion as they are ordinary and usual. Diderot, without the Platonic faith in the idea of beauty, and unable to discover a common quality in all beautiful objects, could affirm the existence of beauty neither in the mind of man nor in the material universe. With a mind of singular acuteness, which delighted in the discovery of relations, he strangely imagined this delight to be one of the pleasures of taste, and boldly proposed the theory that beauty consists in the idea of relation—that objects are beautiful in proportion as

we can perceive their relations to many other objects. Marmontel advanced the opinion that an object is beautiful which makes us experience pleasure as we discover in it the power of its author, the abundance of resources which he had at command, and the intelligence which has presided over its formation. He thus confounded beauty with sublimity. Recent French philosophy, in its struggle against the materialism of the last century, has attended principally to questions of method and psychology, to logic, ethics, and theodicy, and has neglected or made only the most general observations upon the science of the beautiful. Jouffroy and Cousin have, however, introduced some of the results of foreign speculation.—In England, the earl of Shaftesbury, an accomplished admirer of Plato, was the first to recall philosophy to the subject of beauty, and moralized elegantly and rapturously over the supreme good and the supreme beauty which he regarded as the same. In his ethical views he considered man endowed with a distinct moral sense for discriminating between virtue and vice, and a little later Hutcheson transferred this sense from the department of ethics to that of æsthetics, and suggested a peculiar inward faculty for the perception of beauty. In reference to objective beauty, Hutcheson repeated the theory of unity and variety. The waving line by which Hogarth sought to account for beauty, especially for female beauty, may be taken as an illustration of this view. The most arbitrary and unfortunate of all the English theories on the subject is that of Burke, who, having adopted a materialistic philosophy unnatural to his genius, sought the laws of beauty in the laws of organism and of the nervous system. Every thing which produces an extraordinary tension of the nerves causes a passion analogous to terror, and is consequently a source of the sublime; every thing, on the contrary, which produces a relaxation in the fibres is a beautiful object. Other philosophers have variously sought beauty in some quality of external things or in some faculty of the soul, but Burke seeks it in the state of the body, making it a matter of the optic and auditory nerves and of animal fibre. The Scotch metaphysician, Reid, advanced what may be termed the symbolical theory of objective beauty. Starting with the Platonic view that objects are beautiful only because they express spiritual ideas, he maintained that moral beauty has certain material symbols. Thus a serpentine line is beautiful, not from any quality that it has in itself, but because it has relation to certain moral qualities, as, for instance, suppleness and gentleness. Alison accords with this view in denying any inherent beauty in objects, which, he affirms, become beautiful only as they become a source of pleasant emotions to us by association with our feelings. Thus beauty would depend upon the accident of what may be interesting to each one, and be as various and shifting as individual experience. Diderot made it intellectual, a matter of the relations it suggests;

Alison makes it passionate, a matter of the emotions it awakens; both make it objectively unreal, and subjectively indeterminate. The theory of Alison has been, with unimportant modifications, adopted and illustrated by Dugald Stewart and Francis Jeffrey. The latest English æsthetic writer is Ruskin, who raises beauty out of the sphere of accident, and like Plato affirms it to be a manifestation of the thought of Deity. It marks the material universe which is a semblance of the divine attributes, and it marks human actions which are vital with the presence of God, being the felicitous performance of his will. Every beautiful object reveals the infinite, and has a unity within itself; it is in repose, but at the same time suggests a magnificent energy; it has about it the dignity of justice and purity, and the moral judgment enters largely into the perception of its beauty. Not finding beauty and goodness separated in objects, Ruskin is unwilling to distinguish them as ideas, denies the possibility of great success in art to wicked men, and makes ideal beauty equally the aim of the religionist, the moralist, and the artist.—The first of the German thinkers upon the beautiful, and the most important writer on the subject since Plato, was Baumgarten, a disciple of Leibnitz and Wolf. While for 10 centuries beauty had been tossed to and fro from matter to spirit, and had been variously assigned to almost every quality in objects, and almost every habit of the soul, Baumgarten first fixed it firmly as that which appeals to human sensibility. The intellectual and the moral natures have their respective ideals, but the whole current of the sentiments and passions sets toward beauty. The intellect perceives with logical clearness, but there is another kind of perception, a *cognitio sensitiva*, which grasps beauty not at all by the understanding, not merely by the sense, but by the whole human sensibility. The philosopher of *Ægina*, who, according to his own expression, heard the harmony of the celestial bodies, though only the sense of sight was addressed, is an illustration of the Baumgartenian perception of beauty. It is the unity, the combined result, of the variety furnished by the senses. The theory of Baumgarten became the foundation of the science of æsthetics, and was more fully developed by subsequent philosophers. Kant accurately defined the beautiful as that which is an object of pure disinterested satisfaction; he thus distinguished it from the agreeable and the good, in both of which we are interested, since we desire to possess the former and to realize the latter. He did not in his speculations on this subject pass the chasm which separates the subjective from the objective side of his philosophy, and did not enter on the question of objective beauty. This task was left for the philosophical genius of his enthusiastic disciple, the poet Schiller, who found beauty in naturalness and simplicity, that is, in the easy and harmonious blending of idea and form. The philosophy of Fichte, which was a concentration of the universe in the Ego, and almost a moral

fanaticism, was unfavorable to speculation on this subject; since where morality monopolized all the passions, and life was but a struggle of the free power of the Ego against the resistance of nature, the sphere of art was contracted, and beauty could be at most but a spectacle of Fichtean virtue. The theory of the beautiful approached to completeness in the philosophy of Schelling. The principle of this philosophy is the higher unity or identity of the two points of view which Kant had separated, namely, subject and object—of nature which is visible mind, and of mind which is invisible nature. This unity pervades the physical universe, but is especially manifest to us in the realm of art. Beauty is the fusion of the infinite with the finite, of free spirit with fated matter, of life with nature, of idea with form. Thus art, which reveals beauty, combines the two terms of existence, whose union constitutes not only the beautiful, but also the true, the absolute, the divine. Art is therefore the highest manifestation of spirit, and is essentially religious. Schelling doubtless passed the goal in this apotheosis of art. The artistic form being the most perfect expression of truth, philosophical truth should reassume this form and return to ancient poesy and myth. He confounded truth, beauty, and goodness, philosophy, art, and religion, and the forms that were proper to each; religion became a kind of poetry, and sentimentalism, mysticism, and symbolism everywhere made an irruption into science and history. Schelling was influential in quickening the study of the monuments of art, and in reviving Christian art, and among his most enthusiastic disciples were the writers of the romantic school, Tieck, the Schlegels, and Solger. The last of these accounted for beauty on the principle of irony, and made it the end of art to reveal to the human consciousness the nothingness of finite things and of the events of the real world. The perception of beauty consists in assuming the stand-point of divine irony, playing with created things, laughing at the interests, passions, struggles, and collisions of men, at their sufferings as well as their joys, and in discerning above this tragic comedy of human life the immutable power of the absolute. To rectify and develop the conception of Schelling was the task of Hegel. To Hegel beauty is the idea in the form of its finite manifestation. It first appears in nature and in history, but is there defective because unconscious. It exists consciously in human thought, but being there only subjective seeks to realize itself outwardly. This realization of thought is beauty, whose realm is art. Works of art are the objective forms of the ideal, like the works of nature, but without the defect of nature. In the ancient symbolic form of art matter preponderated, the ideal shining through but imperfectly; in the classic form of art the ideal was in harmony with, and adequately expressed by the form; and in romantic or Christian art mind preponderates, and breaks through matter

at every point. With Hegel the history of the philosophy of the beautiful terminates, his successors having made but inconsiderable modifications of his views. The result of the brilliant series of speculations on the subject in Germany has been to establish philosophically art as the province of beauty, and sentiment as the faculty which perceives it. Schelling and Hegel, however, almost borrow the words of Plato in affirming that matter is beautiful only as it is inspired with an idea and made to express the things of the spiritual world. Among the most valuable treatises upon beauty are the "Greater Hippias," "Phædrus," "Banquet," and "Republic" of Plato; Plotinus, in the 6th book of his first Ennead; Spalletti, *Saggio sopra la bellezza*, Rome, 1765; Baumgarten, *Æsthetica*, Frankfurt, 1750; and the more recent æsthetic works of Jean Paul Richter, Bouterweck, Hegel, Vogel, and Jouffroy. (See *ÆSTHETICS*.)

BEAUVAIS, an ancient city of France, capital of the department of Oise, on the Thérain, 42 miles N. by W. of Paris; pop. in 1856 14,086. When the Romans invaded Gaul, it was the chief town of the Bellovaci; it became early the seat of a bishopric, the holder of which was, under the Capetian kings, one of the 12 peers of France. During the 14th and the beginning of the 15th century, it was held by the English; and it was Pierre Cauchon, bishop of Beauvais, who presided over the court by which Jeanne d'Arc was sentenced to be burnt. In 1472 the city, being besieged by Charles the Bold, duke of Burgundy, was courageously defended by its inhabitants, among whom a woman, Jeanne Lainé, celebrated under the name of Jeanne la Hachette, distinguished herself by her intrepidity. Beauvais is also the birthplace of Villiers de l'Île-Adam, grand master of the Hospitallers, who in vain defended the island of Rhodes against Soliman. The city was once surrounded by ramparts, which have been partly levelled and converted into promenades; it contained also a great number of convents and churches, only 2 of the latter now extant; the cathedral, one of the largest in France, the choir of which is a masterpiece of Gothic architecture; the church of St. Stephen, much older, in which the mingling of the ogive and the semi-circular arch may be perceived. The *hôtel de la préfecture* is also a curious monument of Gothic style. The imperial manufactory of tapestry, founded here in 1664 by Colbert, is next in excellence to that of Gobelins.

BEAUVAIS. I. CAMILLE, silk manufacturer of Lyons, born in 1781, died in 1852. At the age of 18 he was already at the head of a large establishment, and at 20 employed 2,000 men. He was presented to the empress Josephine by Napoleon as an instance of youthful abilities. He was the first to introduce home-manufactured China crape into the French market, his first experiments for which were made after the pattern of a small piece cut by stealth from the empress's dress. In the latter years of his

life the breeding of silk worms occupied his attention. II. CHARLES THEODORE, a French general, born Nov. 8, 1772, at Orleans, died at Paris, in the beginning of 1830. He first served as a private, but rose rapidly to the rank of adjutant-general. He went to Egypt with Bonaparte, but resigned on account of some disagreement with his chief. While returning to France, he was taken prisoner by a corsair and brought to Constantinople, where he was detained for 18 months. The first consul did not permit him to reënter the army until 1809, when he served in Spain and was afterward sent to the Rhine. In 1815 he commanded at Bayonne, and was dismissed on the return of the Bourbons. Then he returned to literary pursuits, and was the compiler of the very popular publication, *Victoires et conquêtes des Français*, the 28 vols. of which appeared in 1817 and the following years. He was also the editor of the *Correspondance officielle et confidentielle de Napoléon Bonaparte avec les cours étrangères* (Paris, 1819, 1820, 7 vols. 8vo). III. JEAN BAPTISTE CHARLES MARIE, an eloquent French preacher, born at Orléans in 1731, died April 4, 1790, at Paris. He entered sacred orders, with the intention of attending especially to preaching, and soon became a favorite among those who could appreciate his elegance of style and attractive delivery. The characteristics of his eloquence were suavity and tenderness, but he sometimes showed freedom, and even boldness of speech in his sermons at court. In person and talent he bore some likeness to Fénelon. He had been promoted to the bishopric of Senes, which he resigned in 1788. Six years later he was one of the deputies of Paris to the states-general.

BEAUVAU, the name of a princely French family, several members of which deserve to be noticed.—RENÉ, one of the most valiant knights of the 18th century, accompanied Charles, duke of Anjou, in his conquest of Naples, contributed to the victory of Benevento, was appointed constable of the new kingdom, and died from his wounds in 1266.—LOUIS, lord high seneschal of Provence, chamberlain to René d'Anjou, king of Sicily, with whom he lived in great familiarity, served in various war expeditions; and being sent by René as his ambassador to Pius II., died at Rome in 1462.—BERTRAND, died in 1474, was employed as a diplomatist by Charles VII. of France; he negotiated truces with England, and a little later took an active part in the conquest of Normandy. He was also in great credit with Louis XI.—HENRI, general and diplomatist, lived in the latter part of the 16th century and during the first of the 17th. He served in Hungary under Emperor Rudolph II., and distinguished himself against the Turks.—MARCO, prince of Craon, died in 1754, was governor of the young Duke Francis of Lorraine, who afterward married Maria Theresa and became emperor of Germany. Marco, rewarded with the viceroyalty of Tuscany, lived in Florence surrounded

by all the eminent literary characters of Italy, and acquired the renown of being not only one of the most learned, but perhaps the most amiable man of his time.—RENÉ FRANÇOIS, an illustrious prelate, the worthy colleague of Fléchier and Fénelon, born in 1664, died in 1739. Being bishop of Tournay when the town was besieged by Prince Eugene, he showed the utmost generosity and devotion to his flock, converting his episcopal palace into a hospital, selling all his valuables and borrowing over a million of francs to relieve the needs and sufferings of both the soldiers and the inhabitants. On the taking of the town, he was ordered to perform a Te Deum in honor of the conquerors, but courageously refused to obey the summons.—CHARLES JUSTE, marshal of France, born at Luneville, in 1730, died in 1793, distinguished himself during the siege of Prague and the glorious retreat which followed, 1742. He fought bravely at the storming of Mahon, 1756, where he commanded the principal attack, and contributed in 1760 to the victory won at Corbach by Marshal Broglie. On Aug. 4, 1789, when the revolution had already commenced, he became a member of the cabinet of Louis XVI., but his advice was of little avail, and he was dismissed at the end of 5 months. He lived long enough to see the king die on the scaffold.—CHARLES JUSTE FRANÇOIS VICTURNIEN, born March 29, 1793, served during the Russian war under Napoleon I., and was appointed senator in 1852, by Napoleon III.

BEAUVOIR-SUR-MER, a town of France, department of Vendée, opposite the island of Noir Moutier, about 3 miles from the sea, with which it is united by the Cahouette canal. It was formerly fortified. In 1688, Henry of Navarre, who was soon to become Henry IV., came near losing his life in an ambuscade, while besieging its castle. It is now a small trading port, dealing in corn and salt, produced in the neighboring salt marshes. Pop. in 1856, 2,746.

BEAUVOIS, AMBROISE MARIE FRANÇOIS JOSEPH PALISOT DE, a celebrated French naturalist and traveller, born July 27, 1752, at Arras, died in Paris, Jan. 21, 1820. He studied law, and became receiver of the crown rents. This office being suppressed in 1777, Beauvois resolved to devote himself to science, and became in 1781 a corresponding member of the academy of sciences. In 1786 he joined an expedition sent by the French government to the western coast of Africa, and explored Owara and Benin. Within a period of 18 months he gathered a considerable number of plants and insects, which he forwarded to France. He next repaired to St. Domingo, where he was admitted to the high council of the island. The colony was then in a very precarious situation, and it became from day to day more difficult to keep the blacks in subjection. A pro-slavery man and an opponent of the abolition of the slave-trade, which, according to his opinion, would have inflicted a deadly blow on the colonies,

Beauvois went to solicit assistance from the United States; but his efforts were of no avail. Upon his return in 1798, he found the island in an awful state of confusion; he lost his collections in the conflagration of Cape François, and was himself put in prison by the negroes, who naturally looked on him as an enemy. A mulatto woman to whom he had previously granted her freedom, effected his liberation and furnished him with the means of reaching the United States. On his arrival at Philadelphia, he heard that he had been proscribed in his own country; and being penniless and friendless, he undertook to teach music and the languages to support himself. He gained the acquaintance of several persons of distinction. His proscription having been annulled, he returned to France and busied himself in putting his collections in order. In 1806 he was called to the institute as the successor of Adanson. During the Hundred Days, he was appointed councillor of the university of France.

BEAUZÉE, NICOLAS, a French grammarian, born at Verdun, May 9, 1717, died in Paris, Jan. 23, 1789. Most of the grammatical notices in the great *Encyclopédie du 18e siècle* are from his pen, and have been published in a separate form, under the title of *Dictionnaire de grammaire et de littérature*, in connection with Marmontel's literary notices (Liège, 1789, 8 vols., 4to). His *Grammaire générale, ou exposition raisonnée des éléments nécessaires pour servir à l'étude de toutes les langues* (Paris, 1767), was highly praised by the learned Barthélemy, and rewarded by a gold medal from the empress Maria Theresa of Austria. This work was reprinted in 1819, and is frequently referred to.

BEAVER (*castor*, Cuv.), a fur-bearing amphibious animal, of the order *rodentia*, or gnawers. They are common to the northern and north temperate latitudes both of Europe and America; but are very rare in the middle latitudes, and are unknown in the south, even of Europe. They formerly abounded in England, so far south as Berkshire, and some persons suppose that oral tradition still survives relating to their existence in that island. Whether this be the case or not, which is open to doubt, it is certain that their bones are found in great numbers, in some districts, in the accumulations of peat in the fens, and on marshy river borders. Within a very recent period, beavers were abundant in all that country which constitutes the northern, middle, and western states of the United States; as the large number of their dams, and of the beautiful level beaver meadows, caused by the accumulation of soil and filling up of their ponds by alluvial matter, sufficiently indicates. In New York, especially in the western portion of the state, these relics of the industrious and intelligent *rodentia* are particularly numerous; and in the map of that region in Pinkerton's Atlas, published in 1815, the country between Lake Oswegatchie and Lake Oneida is laid down as "a marshy tract full of beavers and otters;" nor

is it, indeed, very certain, that some few scattered families of these interesting *amphibia* may not be yet found in that singular region, which is still almost as wild as the northern shores of Lake Superior, among the Adirondac mountains, and the sources of the Hudson river. Recent scientific observers have also seen what they believed to be fresh beaver signs on the Mushannon, in Centre county, Pa., and assert the present existence of the animal in Tennessee and Georgia. The gradual clearing up and cultivation of the country has, however, banished them, mile after mile, and day after day, from the haunts of intrusive and encroaching man, until they are now scarcely to be found, at all, on this side of the streams which have their springs among the roots of the Rocky mountains. Even there, also, such unwearied war do the wild trappers of the various fur companies wage against them, and so largely tempting to white cupidity have been the sums paid for their spoils, that they are rapidly decreasing, and will, it is probable, are long become extinct. It has been said, however, that the application of silk to the manufacture of hats, and the large use which has been made in late years of plain felt, of different qualities, by causing a very material fall in the price of beaver, has procured them such a respite—the trappers no longer caring to labor so assiduously for the decreasing compensation—that they are again becoming numerous in places where they were a few years since almost extinct. "The beaver is low and squat in its body, about 2 feet in length. Its body is thick and heavy. The head is compressed; the line of its profile from the occiput to the muzzle is unbroken. The muzzle is oblique and blunt, and the upper lip cleft as in the hare. The eyes are small, oblique, and wide apart from each other. The ears are also small. The fur is remarkably close and soft, but interspersed with longer bristly hair, which gets more abundant as the animal grows older. Both the hind and fore feet seem short in proportion to the size of the animal, when it walks upon the ground; but, as is the case with all animals of this order, the habit of which is generally to leap, to stand up, or to support themselves on their hind legs, these are much longer than the fore ones. In the use of its feet in walking, it combines 2 distinct habits. On the fore feet it is *digitigrada*, or walks on the toes only, and on the hind feet it is *plantigrada*, or walks on the entire length of the sole. This again gives the fore feet more apparent stability than the hind ones, in walking; but it gives the whole animal a wriggling gait, and the beaver is, in consequence, rather a slow animal upon land. The tail is the most peculiar part of the structure. It is very large, nearly half as long as the body, measuring from 10½ to 11½ inches, oval in shape, and flattened on the upper and under sides. It is, also, with the exception of a small portion at the base, not covered with fur, like

the rest of the animal, but with a sort of horny scales, which are produced by a thick dusky skin. The tail is not, however, used as a trowel, spade, hammer, or any other tool, as is stated in the books; but it sometimes answers as a prop, when the animal stands erect and uses its fore paws in working. As is usually the case when animal instincts are to be lauded, the intelligence of the beaver has been absurdly exaggerated by fanciful writers, composing in their studies; as when they describe some of the beavers as lying on their backs, and receiving loads of wood and clay on their supine bellies, and then suffering themselves to be dragged along the ground by their companions, thus discharging the functions of carts, or sledges. The works of nature are sufficiently wonderful and grand without that man, in attempting ignorantly to magnify them, should render them ridiculous by his conceits." So, in like manner, all the grand works of the beaver being carried on by night, little is actually known of their manner of working, except from the examination of what they effect. All that they do in general concert is to build dams, when they have chosen the site of their settlements on running streams, which do not afford a sufficient depth of water to be secure against freezing in winter; and this they do by cutting down trees, invariably up stream of the place selected for their wear, so that the current may bear them down toward the site. The trees which they thus cut down with their keen fore-teeth, are often 5 or 6 inches in diameter. Where the current is gentle, the dam is carried horizontally across, but where the water runs swiftly, it is built with an angle or convex curve up stream. These materials rest on the bottom, where they are mixed with mud and stones by the beavers, and still more solidly secured by the deposit of soil carried down by the stream, and by the occasional rooting of the small willow, birch, and poplar trees, which they prefer for their work, in the soil at the bottom. Their houses or lodges, seldom made to contain more than 4 old and 6 or 8 young beavers, are very rudely built, sticks, stones, mud, and all the materials used in constructing the dam, being piled horizontally, with no method beyond that of leaving a cavity in the centre. There is no driving in of piles, wattling of fences, and mud plastering, as described; and when leaves or grass are interwoven, it is done casually, not to bind the mortar, as men apply hair for that purpose. The beaver conveys the materials between his fore paws and chin, arranges them with his fore feet, and when a portion is placed as he wishes it, he turns about and fetches it a slap with his tail, similar to that which he gives on the surface of the water preparatory to diving. In the breeding season, and in early summer, the beavers do not live in their houses, nor in communities, but only become gregarious in the winter, and when preparing for it. They begin to build, ordinarily, in the latter

part of August, although they sometimes fell their timber earlier in the summer; but their houses are not finished and plastered, whether owing to accident or design, until late in the season; when the mud and water freezing, as the material is laid on, add much to the security of the beavers against the wolverine, or glutton, who, with the exception of man, is their worst enemy. The food of the beaver consists of the bark of the aspen, willow, birch, poplar, and alder, of which it lays up a stock for the winter, during the summer time, on the bank opposite to its lodges; but unless compelled by necessity, it avoids the resinous evergreens, such as the pine and hemlocks. As it always performs its evacuations in the water, it is naturally, not instinctively, or by reason, a cleanly animal; and hence no filth is ever accumulated about its dwellings. The beaver produces from 2 to 5 young at a litter, and owing to its breeding away from its villages, in dispersed and solitary places, as well as to the fact that its fur is valueless at the breeding season, its extinction has been delayed longer than could be hoped. The beaver is easily domesticated, and becomes very tame. When in confinement, so soon as the building season arrives, the constructive instinct seizes him; just as the ardor for nidification and migration seizes uncoupled and caged birds, showing that nature, not reason, is at work, and that now, as of old, "the ostrich," and not the ostrich only, but all flesh, fish, and fowl in its kind, "knoweth its time."

BEAVER, a piece of armor; the lower part of the front piece in the complete helmet of the knight of the middle ages, which, with the *avantaille*, completed the vizor. When the latter was raised and the beaver lowered, the whole face was uncovered; *vice versa*, it was completely guarded. The *avantaille* covered the face from the brows downward to the nose, the beaver from the chin upward till it met the *avantaille*. Either could be opened independently of the other. When it was desirable to obtain a freer circulation of air, or to eat or drink, while preserving the incognito, the beaver was lowered; as Sir Walter Scott accurately describes, when Ivanhoe, in his romance of that name, after overthrowing Sir Brian de Bois Guilbert in the tournament, calls for a bowl of wine and quaffs it to the confusion of all foreign tyrants. When a knight, on the contrary, wished to reveal himself, he raised his *avantaille*, and so disclosed his features.

BEAVER, a county of Pennsylvania, bordering on the Ohio and intersected by Beaver river and by the Ohio and Pennsylvania railroad. It is well watered, and the soil near the streams is remarkably fertile. The surface is undulating, and in some places covered with extensive forests. Bituminous coal and limestone are abundant. In 1850 this county yielded 17,915 tons of hay, 498,772 lbs. of butter, 244,112 bushels of wheat, 226,253 of Indian corn, 329,481 of oats, beside considerable

quantities of wool, pork, &c. It contained, at the same date, 25 flour and grist mills, 18 saw mills, 3 paper mills, 5 woollen factories, 4 manufactories of agricultural implements, 5 breweries, 18 tanneries, 4 iron founderies, and several other mills and factories of various articles. Area, 650 sq. m.; pop. 26,689. Capital, Beaver.

BEAVER, PHILIP, an English navigator, born Feb. 28, 1760, died April 5, 1818. When 17 years of age, he entered the royal navy, in which he served during the war of the American revolution. After the peace, finding himself out of employment, and impatient of repose, he conceived various projects, and settled at last upon founding a colony in Africa, the object of which should be not commerce, but to cultivate the land by free labor, to civilize the negroes, and to introduce among them the European religion, arts, and manners. He had read in a French author a description of the isle of Boulama, in the archipelago of Bisagos, on the western coast of Africa, and he judged this island the most suitable place for the execution of his scheme. He communicated with numerous persons, particularly with naval officers, and found a general sympathy for his project; an act of association was therefore formed, the subscribers met, and a plan was submitted to the minister Pitt, who gave to it his approbation. On the 13th of April, 1792, 8 ships, bearing 275 white colonists under the guidance of Beaver, set sail from the Isle of Wight. The expedition proved, however, a failure. Within 4 months more than a third of the colonists had died by fever upon the African coast, and more than half the survivors hastened to abandon the project and return to their country. Those who remained, and escaped the fever, suffered incessant embarrassments and discouragements. Beaver himself, several times prostrated by the scourge which threatened to annihilate his colony, still maintained his courage, struggled hopefully, though with failing strength, against all depressing influences, and had no thought either of giving up the enterprise, or leaving the fatal island. He hoped for new supplies of men and money from England, trusted to the energy of his character to achieve the prosperity of his colony, and the elevation of the African race. He planted numerous fruit trees and vegetables, some of which were flourishing; and numerous constructions necessary to the safety and well-being of the colonists were nearly completed. Not content with regulating and watching over every thing, he himself gave the example in all kinds of labor, and selected for his own hands whatever was most difficult and painful. As he saw the spirits of the colonists still continue to droop, he called them together, pointed out to them the difficulties over which they had triumphed, and strove to revive their courage by portraying the hopes which they could reasonably cherish for the future. Yet his efforts were in vain, and he saw that he must renounce his enterprise. He embarked,

Nov. 29, 1798, with his surviving companions, from the isle of Boulama, and arriving at Sierra Leone, was attacked anew by the fever and detained 2 months. When he again embarked for England, he had with him but one of all the colonists who had sailed for Africa under his direction. He arrived at Plymouth in May, 1794; and in June, a meeting of the shareholders of the association was held in London, and in spite of the losses which resulted from the ill success of the expedition, such was the admiration which the disinterested, resolute, and noble conduct of Beaver had inspired, that the assembly unanimously voted him a gold medal in testimony of their gratitude. The events of this expedition were described by Beaver in a publication entitled "African Memoranda," a work containing much curious and original information. He subsequently went again into the service, distinguished himself in the descent of Gen. Abercrombie upon Egypt in 1801, and in the capture of the Isle of France in 1810. In 1818 he cruised in the Indian ocean, in command of the frigate *Nisus*, and died at the Cape of Good Hope from too severe exposure and labor in exploring the coast of Quiloa. Beaver was not only most efficient in action, but was also a man of taste, and possessed a large fund of knowledge. It was said that he read through the entire "Encyclopædia Britannica" during one of his long cruises.

BEAVER ISLANDS, a group in Lake Michigan, near its northern extremity, and having one island of considerable extent (40 sq. m.), called Big Beaver. After their expulsion from Nauvoo, a dissenting branch of the Mormons established themselves there under Joseph Strang.

BEAVER LAKE, the largest lake in Indiana. It has an area of 26 square miles, and is situated in Jasper county, south of the Kankakee river.

BEAVER MEADOW, a village in Carbon county, Pennsylvania, and about 100 miles north-west of Philadelphia. It is connected with the Lehigh river by a railroad, over which much coal is sent from Beaver Meadow.

BEAZLEY, SAMUEL, English architect and author, born in Westminster, in 1788, died at Tunbridge castle, Kent, Oct. 12, 1851. He erected a great many theatres in England, viz.: 8 in London, 2 in Dublin, and 8 in the provinces, beside remodelling several, adding the colonnade to Drury Lane, and the Strand façade to the Adelphi, and supplying drawings for 2 in India, 3 in Belgium, and 1 in Brazil. The merit of all his theatrical constructions is that people can see and hear in them. Mr. Beazley also erected many railway stations, including the handsome terminus of the south-eastern railway over London bridge. He wrote over a hundred dramas, many of them successful in their day. The English libretto of the "Sonnambula" and of some of the other operas were from his pen. He also wrote two novels, "The Roué" and "The Oxonians;" the first of these has been erroneously attributed to Bulwer.

BEBAYH-EL-HAGAR, or **BEBEK-EL-HADJAR**, a ruined town of Egypt, in the delta of the Nile. It embraces more extensive remains of antiquity than any other town in that part of Egypt.

BEBIAN, **AUGUSTE**, an instructor of the deaf and dumb, born at Guadeloupe, W. I., about 1782, died about 1828. His father was an eminent French merchant residing on that island. At the age of 14 or 15, he was sent to Paris for his education, and placed under the abbé Sicard. He was sent first to a private boarding school, and afterward to the imperial lyceum, where he graduated. Boarding in the family of the abbé Sicard, he became interested in the education of the deaf and dumb, and after a time determined to devote himself to their instruction. He accordingly prepared himself for the work by taking lessons of the abbé and of M. Laurent Clerc, and when M. Clerc came to this country with Dr. Gallaudet, Bebian succeeded him as teacher. Subsequently, he was appointed censor of studies. This office he filled with great ability from 1817 to 1825, when he resigned it and devoted himself to literature. In 1819 he had received the prize offered by the royal academy of sciences for the best eulogy on the abbé de l'Épée. Subsequently he wrote several other biographies, among the rest one of the abbé Sicard. In 1827 he published a "Manual for the Practical Instruction of Deaf Mutes." After his resignation, he visited the institutions for deaf mutes in other countries.

BEBUTOFF, **WASSILJI OSSIFOWITCH**, prince, a Russian general, born in 1792, the eldest of 4 brothers, who have been more or less connected with the Caucasian war. Their father held the office of treasurer under the administration of Prince Julon, in Georgia; the grandfather was governor of Tiflis, and accompanied Nadir Shah in his expedition to India. For some centuries past we find the family, which originally came from Armenia, occupying a high position among the princely houses of Georgia. Wassilji, after having completed his education at the military academy of St. Petersburg, joined in 1809 the army in the Caucasus, and in 1812 accompanied the Caucasian governor-general, Paulucci, to Livonia, where he took a part in the operations against the French. In 1817 he acted as adjutant of the Russian plenipotentiary, Gen. Jermoloff, on his mission to Persia, on which occasion his familiarity with the Persian language and customs proved invaluable. The subjugation of the territory Akoocha, in the provinces of Daghestan, and of neighboring places, was due, in a great measure, to his exertions; and after having been raised, in 1821, to the rank of commandant of a Mingrelian regiment, he was appointed governor of the province of Iméria, in Transcaucasia, which office he held from 1825 to 1827. In 1828 he distinguished himself by the active part which he took in the storming of Akhalzikh, in Georgia; and on being appointed commandant of this fortress, he

exhibited great bravery in holding out, in March, 1829, with a small number of soldiers, for 10 days, against the superior forces of the Turkish army under Achmet Pasha. Subsequently, he presided over the newly organized Transcaucasian Russian government of Armenia, and concluded, in 1835, a boundary treaty with Persia. From 1838 to 1840 he officiated at Tiflis as member of the Transcaucasian administration, and after acting for some time as commandant of the fortress of Zamosz, in Poland, he returned in 1844 to the Caucasus, and achieved, in Oct. 1846, a victory over Shamyl. In Nov. 1847, he became president of the civil government and of the administrative council of Transcaucasia. In 1858, on the outbreak of the war with Turkey, he was called upon, by the old Gen. Woronzoff, to take part in it. On Dec. 1 of the same year, he prevented the Turks from invading Armenia by defeating the forces under Abdi Pasha; and on Aug. 5, 1854, he achieved a much more important victory over Zarif Pasha, at Korkuk-dere, although the Turkish army was over 40,000 strong, and his own only about 20,000. However, he incurred censure for not following up this victory by marching on Kars, and in 1855 he was relieved from his command by Mouravieff, and returned to Tiflis, to resume his duties as president of the administration. Subsequently, he baffled Omar Pasha's attempt to penetrate into Mingrelia, and for a short time he again replaced Mouravieff in the command of the Caucasian army, until the arrival of the commander-in-chief, Prince Bariatski. He was promoted to the rank of lieutenant-general in 1848, and of general of infantry in 1857.

BEOCAFICO, the *sylosia hortensis*, or fig-pecker, a singing bird which feeds upon insects, figs, currants, and other fruits, and belongs to the order of *syliada* (warblers), and is found in some English and even Scotch counties, but chiefly in southern Europe. It has a voice like a nightingale, lurks shyly in the thickest foliage, flies with singular grace, was eaten with much delight by the ancient Romans, and still is one of the most delectable morceaux on Italian, Grecian, and French tables, especially in Venice. Their usual market price is about \$1 apiece, but they frequently sell as high as \$3 and \$5. An annual feast made on beccaficos is called *Beccaficata*. The term *beccafico* is applied in continental Europe, rather indiscriminately, to different kinds of sylvan warblers, when they are fat and in condition for the table.

BEOCAFUMI, **DOMENICO**, an Italian artist, born at Sienna, in 1484, died at Genoa, March 18, 1549, whose real name was Mecherino, adopted the name of his benefactor, Beccafumi, who, struck with the talent which he displayed while pursuing the humble calling of a shepherd in drawing the figures of the sheep upon the sand, placed him in the studio of a Venetian. He studied at Rome the works of Michel Angelo and Raphael, and on his return to Sienna, executed a number of bronze statues and base-re-

liefs, and the mosaic of the pavement of the cathedral.

BEOCARIA, CESARE BONESANA, marquis of, an Italian economist, born at Milan, March 15, 1738, died Nov. 28, 1794. His education commenced in the Jesuit college at Parma, which he left at the age of 17. He at once devoted himself to the study of Condillac, Helvetius, and the French encyclopædists, but soon found his master in Montesquieu, whose *Lettres Persanes* are said to have revealed to him his vocation. His first work, "Of the Abuses of the Coinage in the State of Milan, and their Remedies," was called forth in 1762 by a commercial crisis. Soon afterward, he formed a literary club, from which issued in 1764 and 1765 the *Caffè*, a periodical on the plan of the "Spectator." Among the papers contributed by Beccaria, was one upon style, wherein he attempts to prove that all men may, with equal culture, become equally successful in literature. The first portion of a more elaborate work in support of these views was published in 1770, but never completed. The essay upon crimes and punishments, printed in 1764, made Beccaria's reputation. "Never did so small a book," says the *Biographie Universelle*, "produce so great an effect." It went through numerous editions, and was translated into almost all the languages of Europe, including modern Greek. Diderot wrote notes, and Voltaire a commentary upon it. Baron Grimm called its author "one of the best heads in Europe," and spoke of him, as "one of the few books that make men think." The academy of Bern struck a medal in honor of the marquis, and Catharine II. of Russia offered him an honorable station at her court. The essay upon crimes and punishments merits notice as the first work of its kind in modern times. It is more valuable as a criticism upon existing systems of penal law, and a statement of the principles which should guide in their reformation, than as an attempt to construct a system. Important problems in the ethics of crime are, however, touched upon, principles of evidence are laid down, and the spheres of judges and legislators respectively are discriminated. Among the most remarkable chapters in the book is that upon torture, wherein the practice, then in vogue, is severely ridiculed. "The problem may be better resolved," he says, "by a mathematician than by a judge, and may be thus stated: The force of the muscles, and the sensibility of the nerves of an innocent person being given, it is required to find the degree of pain necessary to make him confess himself guilty of a given crime." In another chapter, Beccaria declares himself opposed to capital punishment, and argues the point at length. He sums up his book with the following general theorem: "That a punishment may not be an act of violence of one or of many against a private member of society, it should be public, immediate, and necessary; the least possible in the case given; proportioned to the crime and determined by the laws." The opin-

ions broached in this book became the property of Europe, and produced a marked impression upon its criminal jurisprudence, reforms greater or less in scope being soon afterward made in the penal codes of Russia, Austria, Tuscany, and Denmark. In 1768, the marquis was appointed to a professorship of public law and economics at Milan, specially created and endowed for that purpose by Count Firmiani, then governor of that part of the Austrian dominions. His lectures, which attracted much notice at the time, were published after his death in a compilation of Italian writings on political economy. He is an advocate of the *laissez faire* system, and some striking coincidences have been remarked between these lectures, both in style and doctrine, and Adam Smith's "Wealth of Nations." In 1771, Beccaria was appointed a member of the supreme economic council, whence he was transferred to the magistracy of state, and subsequently to the board for reform of the judicial code. Such of his state papers as are preserved, are characterized by the clearness and precision which mark all their author's writings. In one of them it is for the first time proposed to use the decimal system in the application of that base for exact measurement which is derivable from the celestial bodies. Beccaria, though so bold as a writer, was exceedingly timid as a man. He wrote to his friends that, "although he was the apostle of liberty, he preferred not to be its martyr." He was twice married and died of apoplexy. His grave remains, it is said, without a name or an epitaph.

BEOCARIA, GIOVANNI BATTISTA, an Italian mathematician and chemist, born at Mondovì, Oct. 3, 1716, died at Turin, May 27, 1781. He taught successively in the universities of Rome, Palermo, and Turin. The experiments of Franklin had at this time called the attention of the learned to the phenomena of electricity, and in 1753, Beccaria published a treatise on natural and artificial electricity, which was highly praised by Priestley. His subsequent and most important work, *Dell' elettricismo artificiale*, was translated into English by Franklin himself. In 1759 he was appointed by the Sardinian government to measure a degree of the meridian in Piedmont, and published the result of his labors in his *Gradus Taurinensis*. He also wrote many small treatises on electricity.

BEOCLES, a market town of England, founded in 1869. It is richly ornamented with sculpture, and contains several public buildings. The inhabitants maintain a good carrying trade in coals and corn, and are extensively engaged in the making of malt.

BEOERRA, GASPARE, a Spanish sculptor and fresco-painter, born at Baza, in Andalusia, in 1520, died 1570, studied under Michel Angelo at Rome, and executed, on his return to Madrid, several works in fresco for the palace, and adorned many churches. His master-work is a statue of the Virgin, made by order of Isabella de Valois.

BECHER, ALFRED JULIUS, one of the principal leaders in the Vienna revolution of October, 1848, born at Manchester, in England, in 1803, and shot by order of the Austrian government, Nov. 23, 1848, at Vienna. His father, a wealthy English merchant, took him in early life to Germany, where he studied law at Heidelberg, Göttingen, and Berlin. From political causes, he became obnoxious to the Prussian government, and was for some time subjected to imprisonment. On recovering his liberty, he practised law for some time at Elberfeld, and edited a mercantile paper in Cologne, but his love of art drew him to Düsseldorf, where he remained until he received an appointment as professor of music at the Hague. His services in that capacity obtained for him a call to his native country, and in 1840 he entered upon his duties as professor of a musical academy in London. In 1845, a lawsuit made it necessary for him to visit Vienna. In the artistic and literary circles there, Becher was in his element. He wrote musical and artistic criticisms for the papers. When the revolution of 1848 broke out, he became a member of the democratic central committee, and in coöperation with the leaders of the other democratic committees, he edited the "Radical," a paper which existed from June 16, 1848, until the storming of Vienna. After Windischgrätz got possession of the city, Becher was arrested, sentenced to death on Nov. 23, chiefly upon the evidence of his participation in the publication of the "Radical," and shot on the morning of Nov. 23, in the Stadtgraben, before the Neuthor in Vienna.

BECHER, JOHANN JOACHIM, a German chemist, born at Spira, in Rhenish Bavaria, in 1625, died at London in 1689. Although he had to struggle with many adverse circumstances, he acquired an extensive knowledge of medicine, physics, and chemistry, became professor at Mentz, and, in 1660, imperial councillor at Vienna, and first physician to the elector of Bavaria. His attention being also directed to politico-economical subjects, and particularly to the means of increasing the revenues of the state, he contributed, while at Vienna, greatly to the establishment of several manufactories, a chamber of commerce, and an Indian company. But the jealousy of some members of the Austrian government frustrated all his efforts. This jealousy he also experienced at Mentz, Munich, and in Würzburg, and he betook himself to Haarlem; but new misfortunes forced him to seek refuge in London, where he died. He was a man of original, but irregular, genius.

BECHER, SMOFFERD, an Austrian political economist, born Feb. 23, 1806, at Plan, in Bohemia. He studied law, entered the public service, and in 1835 became professor of history and geography at Vienna. His "Manual for the Study of History," which appeared in 1833, and his "General Geography," for the use of schools, which appeared in 1842, and kindred publications, contributed to increase his reputation,

which was still more strengthened by the publication of a comprehensive history of the Austrian mint and currency. On the formation of a new cabinet in May, 1848, he became chief secretary of Doblhoff, the minister of commerce. In September of the same year he was appointed member of the states council, and when Doblhoff withdrew from office, in October, he officiated as minister until Dec. 1848.

BECHSTEIN, JOHANN MATTHIAS, a German ornithologist and forester, born at Waltershausen, in the duchy of Saxe-Gotha, in 1757, died in 1822. He studied theology at the university of Jena, but his tastes led him to the pursuits of the chase, and to the study of animals and plants. Having visited the most celebrated hunting-grounds of Germany to observe the methods practised in them, he opened at Kemnate a school of forestry, and published a journal, entitled the "Diana," devoted to hunting intelligence and kindred matters. In 1800, the duke of Saxe-Meiningen appointed him director of his academy of forestry, and placed at his disposal his forests, a menagerie, and a pheasantry. Bechstein left many works upon the subjects to which he devoted his life, among which is a "Natural History of Germany," especially valuable in the department of ornithology.

BECHUANA (in the singular *Mochuana*, from *chuana*, free, with a personal prefix), a widely extended people in southern Africa, occupying the southern and south-eastern portion of the interior, divided into numerous tribes which closely resemble each other in physical features, in manners, customs, and superstitions, and which in these respects are distinguished, though not strongly, from their eastern neighbors, the Caffres. Their complexion is for the most part a coffee-colored brown, that of the Barolong tribe being the lightest. They are of medium size, symmetrically built, and have the crisped woolly hair which so generally marks the negro. They are of a gentle and unwarlike character, and their numerous feuds rarely have a bloody issue. Their weapons are only a light spear and a short shield, and they are often subjected, without offering much resistance, by their warlike neighbors, the Koranas and Caffres. Yet they are intelligent, manifest a love of independence, and surpass the Caffres in diligence and skill in manual labor. Slavery hardly exists among them. They are rich in sheep and goats, but possess fewer horned cattle, which, however, especially cows, they prize very highly. Where the soil permits it is diligently cultivated, and some of the tribes have considerable industry. They have some notion of deity, but temples, idols, priests, and consecrated objects are almost wholly wanting, though monkeys, snakes, and crocodiles are sometimes worshipped. They affirm that they originally sprang from a cave, which is still pointed out in the Bakoni country, and where the footmarks of the first man may be still seen in the

rocks. Their faith in the supernatural power of a class of wizards, termed rain-makers, one of whom at least is found in every tribe, they share with the other peoples of southern Africa. Polygamy exists to an unlimited extent, and circumcision is a general usage. Christian missionaries have obtained access to several of the most western tribes, and by their influence the women, who formerly performed all the agricultural work, have been relieved from the heavier tasks, only the labor of hoeing, driving away birds, reaping, and winnowing now falling to them. The government of the Bechuana is both monarchical and patriarchal, and of a mild character. Every tribe has its chief or king, who resides in the largest town, and is held sacred by reason of his hereditary right to that office. Under these chiefs are the heads of particular districts and villages, and again under these are the *cosi*, or wealthy men, who form the aristocracy of the nation. The power of the princes is very great, but is limited by the general assembly, called the *picho*, of the subordinate chiefs. The Bechuana formerly extended south as far as the Orange river, but were there met and driven back by the Hottentot races. At a recent period the Caffres made an incursion from the east deep into the Bechuana territory, devastated the country, destroyed cities, many of which had a population of 20,000, and effected for the time a complete political and social transformation. Some of the tribes were totally annihilated. More recently the Boers, or Dutch settlers, have founded establishments, one of which is known as the Orange River republic, within the boundaries of the Bechuana. Among the most important and best known of the Bechuana tribes are the Basuto, which is the most easterly of them, occupying a table-land to the west of the Drakenberg mountains, partially civilized and Christianized, and whose capital, Thaba-Bossiu, has a population of 18,000; the Batlapi, among whom missionaries have had the greatest success, dwelling in a parched region, almost destitute both of wood and water, on the borders of the Kalahari desert, with Mamusa for their capital, their former principal city, Lithaco, being now depopulated; the Barolong, dwelling to the north of the preceding, formerly powerful, but now scattered and almost extirpated by the Caffres; the Bangwaketse, dwelling still further to the north, in a beautiful, fruitful, and well-cultivated valley, who were formerly wealthy, but have suffered severely from the incursions of the Caffres; the Bahurutse, dwelling westward from the preceding, in one of the finest districts of southern Africa, who had considerable industry in agriculture and raising cattle, till they were driven by the Caffres from their country, which, in 1837, was taken possession of by the Boers; the Batoana, dwelling on the northern coast of Lake Ngami, the remnant of the former powerful tribe of Bamangwato; the Bakwains, who occupy the fine hilly regions

along the rivers Notuani and Mariqua, and who have suffered from the Boers; and the Balaka, who are not of Bechuana stock, but, like the bushmen of the Hottentot race, live scattered among various tribes, and are generally despised. Under the name of Bakalahari, the Balaka dwell in great numbers in the Kalahari forest. The Bayeye, who dwell upon the borders of Lake Ngami, are also to be distinguished from the Bechuana. The latest and fullest information concerning the tribes of southern Africa is contained in the "Travels and Researches" of Livingstone.

BECK, DAVID, also BEEK, a Dutch portrait painter, one of the ablest scholars of Vandyke, born at Arnheim in 1621, died at the Hague in 1656. He painted with so much rapidity, that Charles I. of England, who employed him, exclaimed: "Faith, Beck, I believe you could paint riding post." Queen Christina of Sweden employed him in painting the portraits of the European sovereigns for her gallery, but chiefly her own portraits, which were then circulated all over Europe. He travelled extensively, and while once in Germany he was taken so ill that his servants thought he was dead, and prepared him for the grave, while they cheered themselves up in this melancholy labor by resorting to the bottle. One of the party poured, in a frolic, a few drops of wine into the mouth of what he considered to be the corpse of his master, when, to his surprise, the corpse began to revive under the effect of the wine, and was gradually restored to life. When he subsequently died at the Hague, his death was ascribed to poison.

BECK, GEORGE, a painter and ingenious writer, born in England in 1749, came to America in 1795, died at Lexington, Ky., Dec. 24, 1812. He was appointed professor of mathematics in the royal academy at Woolwich in 1776, on account of his reputation for ability in that department, but lost the office for not discharging its duties. After coming to America, he was employed in painting, by Mr. Hamilton, of the Woodlands, near Philadelphia. He was also a poet, and, beside his original pieces, translated Anacreon and large portions of Homer, Virgil, and Horace.

BECK, JOHN BROADHEAD, an American physician, born in 1794, died at Rhinebeck, N. Y., April 9, 1851. He graduated at Columbia college in 1813, at the head of his class, commenced practice in 1817, in the city of New York, and soon rose to distinction. In 1826, he was appointed professor of materia medica and botany in the college of physicians and surgeons, but exchanged it for that of medical jurisprudence, which he held at the time of his death. He published essays on medical subjects, and was associated with his brother, T. Romeyn Beck, in the publication of the great work on "Medical Jurisprudence."

BECK, LEWIS O., a distinguished American naturalist, born at Schenectady, N. Y., 1800, died at Albany, April 21, 1858. He graduated

at Union college, in 1817. In 1830 he was appointed professor of chemistry and natural history in Rutgers college, New Brunswick, N. J., and at the time of his death was professor of chemistry in the Albany medical college. His attainments in natural history were remarkable, and he published works on chemistry, botany, the "Report on the Mineralogy of New York," and an account of the salt springs at Salina, which appeared in 1826.

BECK, THEODORIC ROMEYN, M. D., LL. D., born at Schenectady, N. Y., Aug. 11, 1791, died Nov. 1855. He graduated at Union college in 1807, studied medicine, and, in 1811, opened an office at Albany. In 1815 he was appointed professor of the institutes of medicine and lecturer on medical jurisprudence in the college of physicians and surgeons of the western district of New York. In 1817, finding his health failing, he relinquished general practice, and accepted the appointment of principal of the Albany academy, over which he presided for more than a quarter of a century. He still retained his medical professorship, and was for several years president of the state medical society, but exchanged it for that of medical jurisprudence. Dr. Beck was earnest in the promotion of all philanthropic enterprises; the deaf and dumb, the blind, the insane, the idiotic, owe much to his zealous labors in their behalf. His paper on the statistics of the deaf and dumb, exerted a powerful effect in influencing the action of the state legislature, to liberal measures for their education. He was one of the managers of the New York state lunatic asylum, from its organization, and for the last year of his life the president of the board. In 1849, on the death of Dr. Brigham, he became the editor of the "American Journal of Insanity," and continued in charge of it for 4 years. Although Dr. Beck wrote much, the greater part of his published writings were in the form of addresses, reports, and contributions to scientific journals, and he will be chiefly known to posterity by his great work on the "Elements of Medical Jurisprudence," the ablest contribution to this difficult subject yet given to the world in the English tongue.

BECKER, CHRISTIANE AMALIE LUISE, a Weimar actress, born 1777, died about 1796, admired by Wieland, extolled by Iffland, immortalized through Goethe's "Euphrosyne." She created such an enthusiasm among the *habitués* of the Weimar theatre, that many of the audience drew portraits of her during the performance, and her life and genius are invested with peculiar romantic interest from the remarkable brevity of her career, since she died before she was 20. Her development was singularly precocious; the duchess Amelia, herself, painted her in oil before she was 10. She made her debut as the "Niece," in Goethe's *Graekophia* (her most successful rôle), before she was 15, and was married soon afterward. She left one daughter, who is the present Madame Werner, the prima donna of the Leipzig

opera. Christiane won brilliant laurels as Ophelia, as Luise, and Amelia, in Schiller's "Intrigue and Love," and "Robbers," and in Lessing's *Minna von Barnhelm*.

BECKER, FERDINAND, a German pastor, born about 1740 in the little Westphalian town of Grevenstein, died at Hörter, in 1810, wrote, while canon at Paderborn, various educational books for young people, which, in the opinion of his ecclesiastical superiors, contained thoughts savoring of infidelity. As, at the same time, he made himself obnoxious to them by his advocacy of reform in the church, he was, in 1796, convicted of heresy, imprisoned in the Franciscan convent of Paderborn, and after having effected his escape from prison through the assistance of the numerous friends which the treatment to which he was subjected had made for him throughout Germany, he remained under the ban of excommunication until 1806, when he was restored to his previous position.

BECKER, GOTTFRIED WILHELM, a Leipzig physician and writer, born Feb. 22, 1778, died Jan. 17, 1854. He devoted himself to the practice of his profession and to the publication of medical writings, until 1833, when he turned to belles-lettres literature, to the study of history, and modern languages, in which he had already acquired some reputation. He translated into German some of Cooper's novels, and Silvio Pellico's *Le mie prigioni*. By his literary labors he accumulated \$40,000, to which his son, Karl Ferdinand, the organist, added a house of the value of \$7,000, appropriating the whole amount to the establishment of an educational and charitable institution for the blind at Leipzig.

BECKER, JOHANN PHILIPP, a German democrat, born at Frankenthal, in the Rhenish palatinate, March 19, 1809. His father was a carpenter, and he himself a brush-maker. He received, however, a respectable education, and after the outbreak of the French revolution of 1830, he became a contributor to Siebenpfeiffer's radical paper, *Westboten*. He became involved in troubles with the government; he was arrested, and even after he had recovered his liberty, he was obliged to withdraw to Bern, in Switzerland, where he entered into business, while at the same time he continued to write for the local radical journals. In acknowledgment of his services, during 1846, the authorities of Bern conferred upon him the rights of citizenship. In the autumn of 1847, when the Sonderbund war broke out, he officiated as field-secretary, and subsequently as adjutant of the Swiss general, Ochsenbein. In 1848 he formed a volunteer corps, and took part in the Baden revolution; the defeat of Hecker compelled him, however, to return to Switzerland. At Hünningen he organized a defensive league. He collected a body of Germans and Swiss to assist Mazzini and the other Italian liberal leaders, but this plan was frustrated by the French government, which stopped the progress of his force after its arrival at Marseilles. He was on

the point of proceeding himself to Italy, with some fellow-sympathizers, when the fresh outbreak in Baden prevailed upon him to go to Karlsruhe, where he arrived May 17, 1849. He took the command in a skirmish on June 25, near Durlach, and fought bravely there and elsewhere. When the forces of the united German governments crushed the movement, Becker returned to Switzerland. Subsequently he settled at Geneva, devoting himself again to industrial and commercial pursuits. In conjunction with Esselen, he published at Geneva, in 1849, a history of the revolution in which he had taken part.

BECKER, KARL FRIEDRICH, a German historian, born in Berlin, in 1777, died March 15, 1806. He wrote a universal history, intended more particularly for young people and for teachers, but as he completed only the first 9 volumes, a different tendency was ingrafted upon the work by Woltmann, who wrote the 10th, and by Menzel, who added the 11th and 12th volumes. In 1845, the history was brought out in a still more complete form, in 14 volumes, by Loebell, of Berlin. Although the work presents, in its present shape, a more scientific and elaborate character, yet Becker's original edition is still the most popular in schools and among teachers.

BECKER, NIKOLAUS, a German, born in Prussia, in 1816, died Aug. 28, 1845, celebrated by a national song, written in 1840, *Sie sollen ihn nicht haben, den freien deutschen Rhein*—"They shall not have it, the free German Rhine!" This song became very popular, and the king of Prussia gave Becker the means to complete his studies at the university of Bonn, and his success made him believe that he was a poet, which, however, he was not.

BECKER, RUDOLF ZACHARIAS, a popular writer, who exercised a great influence on the German people, born at Erfurt, April 9, 1752, died March 28, 1822. He first became known by an essay on the theme, "Is it useful to deceive the people?" which gained a prize from the Berlin academy of sciences, in 1799. His theory was, that "happiness depended on the gratification of an innate desire for improvement." In 1782 he took charge of a school at Dessau, and published a journal for youth. A work in 2 vols., entitled "A little book of needful Help, or Instructive Tales of Joy and Sorrow in the village of Mildheim," became such a favorite with the public that over 500,000 copies were soon disposed of. He also produced other works and journals, and the extensive transactions in them led him, in 1797, to set up a publishing and bookselling establishment at Gotha, which is still continued by his son. On Nov. 30, 1811, he was arrested by Davoust, on suspicion of conspiring against Napoleon, and imprisoned at Magdeburg, till April, 1813. On this imprisonment he wrote a book, which still has a historical value.

BECKERATH, HERMANN VON, a German statesman of the liberal conservative school,

born at Oesfeld in Dec. 1801; served in the Prussian diet; in 1848 became a member of the Frankfort parliament, and minister of finance of the so-called German empire under the archduke John; was invited to become prime minister of Prussia, but declined; resigned his seat at Frankfort in May, 1849, owing to unwillingness to participate in any extreme measures; served afterward in the parliament at Erfurt, and in the 2d Prussian chamber, and withdrew to private life when Manteuffel's administration reestablished the old order of things.

BECKET, THOMAS A., archbishop of Canterbury, the Saxon hero, priest, and martyr of England in the reign of Henry II., born in London in 1119, or, according to some writers, Dec. 21, 1117, assassinated at Canterbury, Dec. 29, 1170. He was the son of a Saxon and a Syrian lady, whose union was brought about in the following extraordinary manner: Gilbert, the father of Thomas, having gone to the Holy Land, in the second crusade, was made a prisoner; but while in durance, a Syrian damsel, becoming enamored of him, and being converted by him to Christianity, contrived to effect his liberation, after which, with little chivalry or gratitude, the Saxon crusader returned home as best he might, leaving the lady by the seashore of Tyre. But, with a love and faith stronger than that of the deserted Carthaginian queen, the fair Saracen followed her recreant lover, and, although—so runs the legend—she knew but two words of any European language, the names of her lover and of the city where he dwelt, by the repetition of those two words, "London" and "Gilbert," and by the display of her tears, her beauty, her jewels, and her gold, she at length made her way to the already famous metropolis, and there, with well-deserved good fortune, found her Gilbert, both free and willing to reward her undoubting trust by taking her to his home and to his heart.—Of so strange a union Thomas was the offspring; but, if possible, his own fortunes were stranger yet. He was at first educated by the canons of Merton, and continued his studies in the schools of Oxford, London, and Paris. On the death of his father, he was admitted into the family of Theobald, archbishop of Canterbury, and, with his permission, went to the continent for the purpose of studying the civil and canon law. He attended the lectures of Gratian at Bologna, and of another celebrated professor at Auxerre. Concerning his early life little more is known; but it is recorded that his first appearance at the court of Henry was made in the humblest guise, bearing his fortunes on his back, in the shape of not too sumptuous a garb, riding a spavined jade with galled withers and bare ribs, which moved the insolent mirth of the Norman courtiers. He soon, however, obtained high favor with the king, who, it was alleged, was in some sort under obligation to him, as if he, acting as agent for Theobald, had obtained from the pope letters prohibitory of

the coronation of Eustace, the son of Stephen of Blois, which prohibition ultimately led to the succession of Henry himself to the throne. However this may be, in 1158 he was appointed high chancellor and preceptor of Prince Henry—afterward King Henry III.,—being the first Englishman called to any high office after the conquest. From this time, he became the intimate associate, boon companion, and familiar friend of the king, whose private hours, as well as his most secret counsels, he shared, and of whom he was no less the master of the revels than the keeper of the conscience and the purse. In 1162, on the death of Theobald, he was ordained priest, having been before only in deacon's orders, and the next day consecrated archbishop of Canterbury. So soon as he obtained what had evidently been, from the beginning, the object of his aim, the primacy of England, he at once threw aside the robes of the courtier, and assumed the hair-cloth shirt of the austere prelate. The very year after his consecration, he repaired to the general council, which was held by Pope Alexander III., at Tours, and complained to him of the infringement of the rights of the clergy by the laity of England, which he professed himself resolute to restore. Then commenced that struggle for supremacy between the primates, backed by the ultramontane power of the pope, and the kings of England, supported by the swords of the barons, and generally by the national feeling of the English, which continued more or less powerfully to disturb the kingdom, during the reigns of all the Norman monarchs, until the church of Rome in England was finally abandoned by Henry VIII., in the 16th century.—But ambitious and able as Becket was, he was met by one almost as politic and able as ever sat on the throne of England, and as resolute to maintain, as was the other to assail, his prerogatives, and the laws of his realm. The first point at issue was the liability of the clergy to be tried by the ordinary courts, and held amenable to the ordinary laws, of the land; and this point was decided by the celebrated "Constitutions of Clarendon," passed in 1164, which have, since that time, been the law of the land. These constitutions, at first, Becket avowed that he would never accept, or accept only with some such clause of reservation—intended to neutralize the acceptance—as *salvo ordine suo*, or *salvo honore Dei*. But at length, after much hesitation, he swore to observe them, although, immediately afterward, confessing that he had committed a crime in doing so, he declared himself in a state of penance, and suspended himself from the performance of his ecclesiastical functions, until he should be absolved by the pope. Shortly after receiving this absolution, Becket again receded from his admission of obedience, and, being threatened with sundry legal proceedings in the king's courts, attempted to escape over seas, but was driven back by stress of weather. From this time the struggle became more bitter

and acrimonious on both sides; judgments were obtained, and fines and imprisonments decreed against Becket; but, treating them all with contempt, he held laws, king, and courts at defiance; appealing to the pope against Henry, and finally personally braving the monarch, face to face, in his own presence chamber. At length, however, all his suffragan bishops, except Jocelyn of Salisbury, and William of Norwich, appealing against him, in the king's behalf, to Rome, and the barons of the realm having ordered his apprehension and imprisonment, he escaped, under a feigned name, to Normandy. Here he continued nearly 7 years, in a sort of honorary exile, the pope declining to insist on his restoration to the see of Canterbury, but, after 2 years, appointing him to the rich abbey of Senon, which exasperated Henry to such a degree that he issued letters of confiscation and banishment against all the kindred, male and female, of Becket, and caused them all to be transported and discharged, penniless, only with the clothes in which they stood, at the gates of his episcopal residence. In retaliation for this, Becket procured from the pope, first, the excommunication of the bishops who had rebelled from his authority; then that of all those who had signed the constitutions of Clarendon, or submitted to them; and, lastly, that of the king himself and the whole kingdom of England, in case he should refuse to reinstitute him in his dignities. While the interdict was yet in suspense, Henry II., who was resident in his Norman dominions, determined to have his son crowned Henry III. of England, during his own lifetime, and issued orders to this effect to the archbishop of York, who, during the suspension of the primate, performed his offices as the first English ecclesiastic. Letters prohibitory were immediately issued from Rome, forbidding the consecration of the prince; but whether, as it has been alleged, they arrived too late, or whether the English bishops coincided with the nation against foreign ecclesiastical control, they were of no avail, as Henry III. was duly crowned, with or without the consent of the pope, at Westminster. Henry II. found, however, that Louis of France was intermeddling in the matter, and that, in case of the promulgation of the interdict, he would, not improbably, follow it up by a declaration of war; wherefore he considered it the better policy to make up the difference, and, Becket condescending to go through some form of submission, to reinstate him in his primacy, and restore to him his "pristine state and dignity," as the old chronicle has it. At the first meeting of conciliation, at Freitville, on the borders of Touraine, in 1170, when Becket tendered the kiss of peace to the king, "I give it to you," he said, "*salvo honore Dei*." The rage of Henry can be imagined, as this very phrase of reservation had been the bottom of the original difference; but he dissembled his indignation, and despatched him home with letters to his son, ordering his reinstatement in peace to all his

dignities and properties, and commanding, also, the restoration to all his clerks and others, who left England on his behalf, of all their confiscated properties. Scarcely, however, had he entered the realm, before he proceeded at once, in virtue of his office, to suspend the archbishop of York, and all the other prelates who had assisted in the coronation, from every office of their episcopal dignities, having provided himself with a papal rescript fully empowering him to do so. The suspended prelates were the archbishop of York, and the bishops of London, Salisbury, Exeter, Chester, Rochester, St. Asaph, and Llandaff, beside the others who had assisted at the coronation. Thereupon the officers of Henry III. commanding him in the king's name to absolve the excommunicated bishops, he consented to do so, on their making submission, and swearing to abide by all the commands of the pope. The bishops, however, refusing to take any oath of the kind, without the king's consent, he remained obdurate, and the prelates, crossing the sea, carried their grievances direct to the foot of Henry's throne. In the mean time, Becket set out "to visit the young king at Woodstock, but was met by messengers, who, in the king's name, commanded him to proceed no further, but to return to his church. He accordingly returned to Kent, and there made preparation to celebrate the season of Christmas, which was approaching."—The old king, Henry II., was holding high festival and banquet in the halls of Rouen, when the excommunicated prelates arrived, bearing the tidings of their own disgrace, and of the action of Becket; adding that the primate was marching to and fro throughout the kingdom, at the head of armed bands of foot and horsemen, and was stirring up the Saxon churls against the gentle blood of Normandy. Henry swore his favorite oath, "By the eyes of God," that if all were accursed who had consented to his son's coronation, he was so himself, and added an exclamation of passionate wonder that, among all his knights and nobles, he had not one who would rid him of that shaveling. Thereupon, 4 Norman barons, hastily leaving the presence, swore to avenge the king, and, without waiting even to change their banqueting robes, took horse and took ship, and on the 5th day after the tidings reached Rouen rode into Canterbury, themselves unarmed, at the head of 50 mail-clad men-at-arms. Their names were Reginald Fitzurse, Richard le Breton, Hugues de Morville, and William de Traci. On entering Canterbury they summoned the sheriff, and ordered him to take measures instantly to suppress any rising in the town which might occur, left 40 men-at-arms at the market-cross to overawe the people, and then rode, with 12 followers, straight to the bishop's palace. Becket was at table when they entered, and commanded him, sternly and rudely, on peril of his life, to raise the interdict and suspension of the bishops, and to submit himself to the pleasure of his sovereign lord, the king.

Argument, debate, refusal, high words, and fierce recrimination followed. The archbishop was cool, haughty, unbending, and insolent in his very calmness; the knights, fiery, untamed, and as unused to meet resistance as they were impotent to control their own fierce temper. Whether the deed were premeditated from the first or not, they acted ever with the coolest deliberation. As they rushed out to arm themselves, they ordered the monks to keep him forthcoming, that he should not flee away. "What!" quoth the archbishop, "think ye that I will flee away? Nay; neither for the king nor for any man alive will I stir one foot from you." "No," said they, "thou shalt not avoid though thou wouldst;" and so they departed in high clamor of words. The archbishop followed them out of the chamber door, crying after them, "Here, here, here shall you find me," laying his hand upon his crown. Then the 4 barons went out and armed themselves complete in mail, with their shields hung about their necks, and their two-handed swords and battle-axes. It was about evensong when they returned, and the archbishop was in the cathedral, whither he had passed by a back entrance, not as a fugitive from danger, but as a priest performing his appropriate duty. The palace gate was shut, but they forced their way in by an orchard, through an open window, which gave them access to the cloisters, and thence to the church, where, when they entered, he was engaged within the rails of the altar. They were reluctant, at first, to slay him in that holy place, and Fitzurse struck him on the back with the flat of his sword, crying, "Fly, priest, fly!" Then, turning to his comrades, he cried, "Have him away to the threshold; we may not slay him here." "Here or nowhere," cried the dauntless priest, seizing the rails of the altar, with a noble courage, which was a part of his nature. All the monks had fled, with one exception, a stout Saxon, Edward Grim, his crossbearer, who stayed to die with his master if he could not save him. As the first blow of a two-handed sword was dashed at the prelate's head, the sturdy servitor thrust out his bare arm to parry it, and, as might have been expected, it was lopped off, like a twig by a woodman's bill-hook, and fell within the chancel. Then quickly the work of blood went on. Hugh of Morville smote him on the head with a mace, and brought him to his knees, and the thirsty blades of the others met in the skull of the unflinching martyr to his faith. The cry, "Thus perish all the foes of the gentle Normans," reveals the true intent of the barons, and discloses the secret of this summary execution. It was not so much the bold priest defending the immunities of his church, assailing the prerogatives of his king, whom they struck down, as the Saxon who dared endeavor to uplift the caste of his degraded Saxon countrymen. His death, as such deeds ever do, advanced his cause more than the longest life ever vouchsafed to man could have done, had it been all de-

voted to that one object. He was the Saxon martyr; canonized, he became the Saxon saint—the most popular of all the saints in England, especially among the lower orders, to whom he was doubly endeared by his Saxon origin, and by his cruel and cowardly slaughter at the hand of Normans. His shrines, at which miracles were believed to be wrought, were the richest shrines in England; and it was the gold and jewels which adorned them—2 large coffers of which were carried to the royal treasury, after the saint's personal property had been forfeited to the crown, consequent to the judgment passed on him by default, for non-appearance in court, nearly 4 centuries after his burial—that induced the rash monarch, Henry VIII.—not, as he alleged, the desire to deter other saints from following so bad an example—to proceed against him for treason to his ancestor of some 14 generations before.

BECKFORD, WILLIAM, an English politician, born 1690, in the West Indies, died at Fonthill, Wiltshire, June 21, 1770. He possessed large estates in Jamaica, and greatly increased his property by commercial pursuits, in the city of London. In 1746 he was returned to parliament by the borough of Shaftesbury, and subsequently sat for London. He strongly supported the liberal interest, was the friend and adherent of Wilkes, and advocated all the popular measures brought forward in his time. Having introduced a bill to prevent bribery at elections, which was vehemently opposed by Mr. Thurlow (afterward lord chancellor), Mr. Beckford briefly replied, "The honorable gentleman in his learned discourse first gave us one definition of corruption, then another, and I thought at one time he was about to give us a third; but, pray, does he imagine that there is a single member of this house who does not know what corruption is?" He was successively alderman, sheriff, and lord mayor of London. This last dignity he held twice, and, during the second time (in 1769-'70), the occurrence took place which has chiefly made his name remembered. The city of London has the right, enjoyed by no other city corporation in England, and shared only with both houses of parliament, and the universities of Oxford and Cambridge, of presenting addresses to the king, to be received by his majesty in person and state. When Wilkes was liberated from prison, in 1770, the city of London presented a series of addresses to George III. First was a petition for the dissolution of parliament, and protesting against every vote of the house of commons as invalid, since it had expelled Wilkes; then a remonstrance yet more strongly worded, to the same effect, and especially inveighing against "secret and malign influence" (that of Lord Bute) at court. The king replied to this, as advised by his ministers, in terms of strong displeasure. The house of commons, in a resolution passed by a large majority, condemned the language of the city to the king. Lastly, as a climax, came a second

remonstrance still more vehement, which, if not actually written by Lord Chatham, was entirely approved by him, again calling for a dissolution of parliament; still complaining of secret influence, calling for the dismissal of the ministry, and strongly animadverting on the tenor of the king's former reply. This was presented at St. James's in state, May 28, 1770, by Lord Mayor Beckford, attended by a deputation. In compliance with custom, a copy of the intended address had been previously sent to court, so that the royal answer might be prepared. This was brief and strong, repeating the king's dissatisfaction with the manner in which he had been addressed, and declaring his sentiments to be unchanged. Instead of retiring, Beckford stepped forward, asked leave to say a few words, and, king and courtiers being alike taken by surprise, proceeded to declare, boldly but respectfully, that the king had no subjects more loyal or more affectionate than the citizens of London, and concluded thus: "Permit me, sire, to observe that whoever has already dared, or shall hereafter endeavor, by false insinuations and suggestions, to alienate your majesty's affections from your loyal subjects in general, and from the city of London in particular, is an enemy to your majesty's person and family, a violator of the public peace, and a betrayer of our happy constitution, as it was established at the glorious revolution." The king made no reply to this. Horace Walpole, writing the next day, spoke of "my lord mayor's volunteer speech," as being "wondrous loyal and respectful." Mr. Gifford declared that Beckford "never uttered one syllable of the speech." But there can be no doubt that he did break through etiquette and make a sharp answer to the king, though, as Lord Mahon suggests, "there is great reason to think that in the hurry of his spirits at the time he did not really utter all that he intended or supposed." He informed the city, two days after, that he had spoken the words now attributed to him, and his conduct was approved by a large majority of the common council. In less than a month from that time he died from a violent fever into which, it is said, his blood had been thrown by the agitation of his mind. The city voted that his statue should be placed in their Guildhall, with his speech to the king engraved on the pedestal, as may be seen to this day. It is said that Beckford spoke "what was prepared for him by John Horne Tooke, as agreed on at a dinner at Mr. George Bellas's, in doctors' commons." Tooke himself claimed the authorship, and Mr. J. W. Croker, in a note on Dr. Johnson's question, "Where did Beckford learn English?" suggests: "Perhaps Beckford said something which was afterward put into its present shape by Horne Tooke." It is pretty clear that Beckford could scarcely have made the speech himself. Lord Mahon says he was "a man of neglected education, noted in the house of commons for his loud voice and faulty Latin."

BECKFORD, WILLIAM, author of "Vathek," the only legitimate son of the preceding, born in 1760, died May 2, 1844. He inherited from his father an income, said to have exceeded \$500,000 a year. His talents were precocious, he read deep, and, as he himself relates, was capable of enduring great fatigue and prolonged study. Before he was 20 he wrote "Biographical Memoirs of Extraordinary Painters," published in 1780. In 1783 he married Lady Margaret Gordon, daughter of the earl of Aboyne. In 1784 he wrote, in the French language, the most remarkable of his works, "Vathek," an eastern tale of wonder. He never translated it, but there subsequently appeared in English a version which he approved and declared to be faithful to the spirit of the original. In 1794 he went to Portugal, and built a magnificent mansion at Cintra, in which he lived for several years, but which, after he left it, was suffered to go to decay. His father had erected an enormous pile at Fonthill, at a cost of £150,000, but even its splendor did not satisfy the prodigal inheritor of his wealth, and this palace he proceeded to pull down, leaving but a small portion of it remaining, and erected Fonthill abbey, on which he spent fabulous sums, and which, for many years, remained entirely closed to the public, a monument of mystery, folly, and selfishness. In 1822, having suffered great losses in his Jamaica estates, by the prospective emancipation of the negroes, he was obliged to sell Fonthill abbey to Mr. Farquhar, and, soon after, the central tower, more than 260 feet high, fell and crushed a large part of the mansion. At Bath he built, on Lansdowne hill, a more singular creation than Fonthill, and here he spent the remainder of his life. His passion for towers induced him to build one at the Bath erection, and, being gifted with extraordinary powers of vision, he saw from its top that that of Fonthill had disappeared from the landscape, although it was 40 miles distant, and proclaimed the fact, before the news of its destruction arrived from the scene itself. On his death he left 2 daughters, one of whom is the present dowager duchess of Hamilton.—Few characters have ever been the subjects of more speculation, either from the force of their talents, or the adventitious circumstance of boundless fortune, than Beckford; and that mystery which was thrown around him early in life, attached to him, by the popular estimation, to the last. The powerful impression produced by "Vathek," its pictures of gorgeous magnificence, its supernatural machinery, the gloomy grandeur of the hero of the story, surrounded by all earthly splendor, yet consorting with powers of darkness, not only established the literary fame of the author, but, in the estimation of the multitude, who never came in contact with him, and looked with wonder upon his imposing piles of building, springing like magic into existence, invested him with weird attributes which had no sympathy with daily human life. The credulous, as they saw the vast tower of

Fonthill abbey rising over the domain which no stranger was permitted to enter, half believed that its lord, who dwelt apart from mankind, as secluded as an eastern despot, kept companionship with beings of unearthly mould. Such an idea was possibly accounted for by the fact of Beckford's having, at one time, attached to him a hideous and enasculated oriental dwarf, such as is frequently found in the households of Asiatic princes. By his equals in rank he was regarded as a man of uncommon talents and peculiarities. On Fonthill he poured out his riches with apparently exhaustless profusion. The estate and abbey cost him nearly \$2,000,000. He began the erection of the huge fabric in 1796, and it was 11 years before he moved into it. Many anecdotes are told of his extravagance in connection with its progress, no obstacle ever being allowed to remain in his way for one moment that could be removed by money. Double sets of hands were employed to work day and night, in hours of darkness by torchlight, and paid so high for their labor that the workmen were induced to quit the repairs going on at Windsor castle. The central tower was 267 feet in height, crowned by a lantern, enclosed with single sweeps of plate glass. When the tower was first in progress, it had attained a lofty height, and, on some gala day, a large flag was hoisted upon the top of it. The work had been constructed in such haste, that the wind, acting with great force upon the banner, exerted such a leverage upon the staff that the pile was overthrown, and fell to the earth with a mighty crash. Merely observing that it must have been a grand sight, and regretting that he had not been present, Beckford gave an instant order for the construction of another tower. In his "palace of pleasures," which now might almost rival the fabled hall of Vathek, Beckford, in some strange freak, secluded himself. His immense wealth enabled him to gratify every whim, and he made an unrivalled collection of works of art and virtu. Immense vestibules, halls, galleries, drawing-rooms, oratories, suite upon suite, were filled with palatial furniture, pictures, carvings, gems, porcelain of the rarest fabric, of which a superb set for every day in the year, and used but once in a twelvemonth, literally crowded the gorgeous saloons. None were permitted to behold these riches but at very rare intervals, and they emerged from the pile to speak of the magnificence within, equalling in dazzling reality the wildest fables of Arabian romance. On one occasion the most famous duchess of the realm was admitted, entertained for a week with princely generosity, the delights of the place varying from day to day, but the inexorable Beckford never entered her presence. At length, in 1822, Fonthill passed out of his hands, and the treasures it contained were scattered, in a sale of 41 days' duration. Thither from every part of the kingdom flocked thousands to gratify their curiosity by a sight of the palace from which they had always been so rigidly excluded, and

to secure some of the dazzling objects with which it was filled in every part—paintings by the greatest of the old masters, the costliest books and illuminated manuscripts, magnificent cabinets of buhl, ebony, and mosaic, porcelain statuary, specimens of ivory carvings by Flaminio and other great artists, and numerous sculptured vessels, of topaz, sardonyx, agate, and crystal, some of them the most exquisite works of Benvenuto Cellini.—The literary fame of Beckford rests upon his early writings. His travels, in a series of letters, published more than 50 years after they were written, contain some of the most animated descriptions, and especially of natural scenery, in the English language. "Vathek," in spite of its grotesque horrors, is likely to remain long a favorite, and bears the impress of great powers. Byron says of it: "'Vathek' was one of the tales I had an early admiration of. For correctness of costume, beauty of description, and power of imagination, it far surpasses all European imitations, and bears such marks of originality that those who have visited the East will find some difficulty in believing it to be more than a translation. As an eastern tale, even *Rasselas* must bow before it; his 'happy valley' will not bear a comparison with the 'hall of Eblis.'"

BECKINGTON, THOMAS, bishop of Bath and Wells in 1443, an English theologian and diplomatist, born in Somersetshire in 1385, died Jan. 14, 1465. He was educated at New college, Oxford. He drew up cases against the Lollards and in favor of his master, Henry VI.'s right to the French crown. He was one of the plenipotentiaries appointed to negotiate a peace with France, 1482.

BECKMANN, JOHANN, a writer on agriculture and natural history, born at Hoya, Hanover, June 4, 1739, died at Göttingen, Feb. 4, 1811. He studied theology at Göttingen, but soon applied himself to natural philosophy and chemistry. For a short time he was professor of natural philosophy and history at a gymnasium in St. Petersburg. He resigned this, and coming back through Sweden, made the acquaintance of Linnæus, and was allowed to see how the Swedish mines were worked. Having returned to Göttingen, he was made professor of philosophy there in 1766, and, in 1770, ordinary professor of economy, which office he held for over 40 years. He published several scientific works, which once were popular, but the best known of his productions is called "Contributions to the History of Discovery and Inventions," of which several translations have been published in England, where (with corrections and additions extending it to the present time) it continues to be a favorite work.

BECLARD, PIERRE AUGUSTIN, a French surgeon, born at Angers, Oct. 15, 1785, died at Paris, March 16, 1825. While yet young he became surgeon-in-chief to the *hôpital de la charité*, at Paris. In 1818 he was placed in the anatomical chair at the school of medicine. He died suddenly of brain fever.

BEOQUEREL, ANTOINE OÉSAR, a French natural philosopher, born at Châtillon-sur-Loing, March 7, 1788. At the age of 18, he entered the polytechnic school, leaving it in 1808, with the grade of an officer, and in the corps of military engineers. He was with the French army in Spain from 1810 until 1812, and distinguished himself at the siege of Tarragona. In 1818 he was attached to the general staff. In 1815, at the downfall of Napoleon, he left the army with the grade of major. In 1819 he commenced the publication of some papers on mineralogical and geological researches, with reference to several kinds of calcareous carbonates, but the investigation of electrical phenomena gradually claimed his whole attention. In studying the physical properties of amber, he was led to make some experiments on the discharges of electricity by means of pressure; and that was the starting point of all his subsequent investigations. He then observed the evolutions of electricity in every kind of chemical action, and discovered the laws of the effects produced. These researches led to the refutation of the "theory of contact," by which Volta explained the action of his pile or battery, and to the construction of the first electrical apparatus with a constant current. The discoveries in electricity made by Becquerel have been published in the *Annales de physique et de chimie* and in the *Mémoires de l'académie des sciences*. His investigations enabled him to discover a very simple method of determining the temperature of the interior organs of men and animals, without producing wounds of any consequence. He made numerous physiological applications of this method, and discovered that whenever a muscle is contracted a certain amount of heat is evolved. Becquerel is also one of the creators of electro-chemistry. In 1828 he made use of this new science in the production of mineral substances, and in treating, by the humid process, the ores of silver, lead, and copper. For these researches he was elected member of the royal society of London; and in 1829 member of the French academy of sciences. In 1832 he was elected member of the institute of France; and since his admission, he has read before that learned body more than a hundred papers on important questions. In 1837 the royal society of London awarded him the Copley medal for his numerous discoveries in science. Among the list of new substances which Becquerel obtained by the slow action of electricity may be mentioned aluminum, silicium, glucium, crystals of sulphur and of iodine, and numerous metallic sulphurets, such as dodecahedral pyrites, galena, sulphuret of silver, iodurets, and double iodurets, carbonates, malachite, calcareous spar, dolomite, metallic and earthy phosphates and arseniates, crystallized silica, &c. He also discovered a process of electric coloring on gold, silver, and copper, which has been extensively and variously applied in practice. In his electro-chemical investigations, Becquerel's object has been to discover the relations exist-

ing between electric forces and the so-called chemical affinities, and to excite the latter into action, by means of the former. All kinds of plating with gold or silver by the humid process, such as electrotyping, are only so many various applications of electro-chemistry. Among the numerous and important labors of Becquerel, we may name his researches on the electric conductivity of metals; on galvanometers; on the electric properties of tourmaline; on atmospheric electricity; on the effects produced by vegetation; on the electro-magnetic balance, capable of measuring with exactness the intensity of electric currents; on the use of marine salt in agriculture.—His second son, ALEXANDRE EDMOND, discovered a chloride of silver which will receive and retain the colored impressions of light; so that the colors of the rainbow may now be fixed in the daguerreotype, in all varieties of hue; but they can only be retained in obscurity, as they gradually disappear when long exposed to light.

BEOSKEREK. I. KIS, or **LITTLE BEOSKEREK**, a Hungarian town, county of Temesvar. The inhabitants are Germans and Wallachians. There is a Roman Catholic church here for the accommodation of the former, and a non-united Greek church for the latter. II. **NAGY**, or **GREAT BEOSKEREK**, a town on the left bank of the Bega, and united by the Bega canal with Temesvar. It contains some district offices, and 2 churches, and enjoys important privileges. Pop. about 12,600.

BED AND BEDSTEAD. By bed is generally understood a sack containing something more or less soft to sleep upon, and by bedstead a framework of various materials to raise the bed from the floor or ground. In the earliest times of all nations, the skins of beasts were generally used for beds, and to this day, hides are spread upon the ground or in rude huts, by savages, for their nightly repose. The ancient Britons, when first invaded by the Romans under Julius Cæsar, were still using dried skins or occasionally rushes and heath, but were taught by their conquerors to substitute sacks of straw to sleep upon. The old English expression of a "lady in the straw" comes from the universal use in old times of straw, and means nothing more than a lady in bed, and alludes metaphysically to an ordinary domestic event. The Romans, in the progress of luxury, soon availed themselves of the soft delights of a feather bed, and its use was urged as a charge of effeminacy against the patricians of the imperial city. The classical nations of antiquity, as they took their food in a reclining position, were in the habit of using a dining bed (*lectus tricliniaris* or *discubitorius*). This was 4 or 5 feet in height, and was arranged in 3 portions, along the 3 sides of a square table; the 4th side being left open for the easy access of the attending servants. The feather bed, although long esteemed a luxury, has now yielded generally to the harder hair mattress, for which we are indebted to the French, from whom it

is often called the "French mattress." The hair mattress with an under-layer of steel springs is now considered the perfection of a luxurious couch. Feathers being such bad conductors of caloric, it is found that they do not allow of that free radiation of heat from the animal body, which is essential to its due comfort and health, and accordingly the hair bed is adopted, as being both more wholesome and conducive to repose. There have been various ingenious contrivances for the ease of the sick and the wounded, and medical and surgical beds of different kinds adapted to the peculiar necessities of the sick are accordingly used. The hydrostatic bed, made of India rubber cloth, and filled with water, has been found one of the most useful of them.—The bedstead was originally contrived to raise the bed from the ground, for the sake of cleanliness, and protection from vermin and other nuisances and dangers. It has generally been constructed of wood, and from its early rude structure it advanced with other household furniture to an imposing degree of dignity. The old "four-poster" with its tall columns of carved mahogany or oak, lifting to the ceiling a great canopy of rich stuff, was the cherished pride of ancient housewives, but it is becoming obsolete. The French bedstead, without posts or curtains, is now generally substituted, it being found, from the ease with which it is moved and the free ventilation it allows, more healthful and convenient. It is made generally of wood, but iron has been found of more advantage, particularly in hospitals and hot climates, as a security against dirt and vermin. Surgical ingenuity has contrived various mechanical means for adapting the bedstead to the requirements of the sick and of the medical attendant, and by which the surgical bed can be raised or inclined in parts as may be necessary.—We have an illustration of the value and importance of the bed in olden times, in an item of Shakespeare's will: "Item, I gyve vnto my wief my second best bed wth the furniture." These are the very words, which are found underlined in the last testament of the great dramatist, as if the bequest had been a second thought.—The "great bed of Ware," which is so frequently alluded to in English literature, and which is able to accommodate some score of sleepers, is probably the largest bed, being 12 feet square, ever spread. Though old enough to have been mentioned by Shakespeare in the "Twelfth Night"—

Big enough for the bed of Ware in England,
it is yet shown to the curious in the town from whence it takes its name. The most uncomfortable bed ever known, was probably that of Procrustes. This ancient Greek and robber, was in the habit of lying in wait for travellers, and after having robbed them he put them to bed on an iron couch, to which he adapted each one, cutting off the limbs of those who were too long, and stretching the joints of those who were too short.

BEDALE, a market town of Yorkshire, England, 83 miles N. N. W. of York. It has a church, built in the time of Edward VI., and a tower once the scene of an obstinate encounter during an inroad of the Scots. The invaders were finally repulsed by the townspeople. Bedale is noted for its fine breed of horses, and for the perfection with which the surrounding country is cultivated. Pop. 2,892.

BEDCHAMBER, **LOREDS OF THE**, personal attendants of the king; in the case of a queen, ladies performing the duties. In the present day they are almost nominal appointments, requiring a weekly attendance at the palace, and accompanied with good salaries. The ancient duties were to sleep in the king's bedroom, and to be always at his command by day or night. These duties were rigorously exacted by the great Louis XIV., and it was the pleasure and honor of the highest nobles in his reign to tender their personal services in the minutest particulars of his daily existence.

BEDDOES, THOMAS, an English physician and writer upon medical topics, born at Shiffnal, in Shropshire, April 18, 1760, died at Clifton, Nov. 24, 1808. He was of a Welsh family, and was educated for one of the learned professions. At Oxford he devoted much time to the sciences, particularly to chemistry. He formed a high estimate of the splendid discoveries of Black and Priestley as applied to the treatment of disease, and mastered the new doctrine of pneumatic medicine, to the application of which he afterward gave much attention. Having taken his bachelor's degree in 1781, he went to London to study anatomy, became a pupil of Sheldon, and published a translation of Spallanzani's "Dissertations on Natural History." He removed, in 1784, to Edinburgh, where he published a translation of Bergman's "Essays on Elective Attractions," to which he added many original notes. He was an active member of the scientific societies of Edinburgh, before which he read several papers. In 1786 he visited France, formed an intimacy with Lavoisier and other distinguished chemists, and upon his return to England, was elected to the chemical lectureship at Oxford. His talents and position drew around him many men of learning, among whom were Gilbert and Dr. Darwin; and in 1790 he published a dissertation, in which he claimed for the speculative physician, Mayow, the discovery of the principal facts in pneumatic chemistry. At the commencement of the French revolution, he adopted its principles with the utmost enthusiasm, and the freedom with which he expressed his political speculations making his position at Oxford uncongenial, he resigned his chair in 1792. He retired from Oxford to the house of a friend, and at this time published his observations on demonstrative reasoning, with particular reference to the study of geometry, in which he claimed, in opposition to ontological theories, that mathematical reasoning depends essentially upon experiment, and proceeds only by evidence of the senses. He anticipated

new improvements in medicine, from the science of galvanism, which was now arising in Italy; and in his first medical work, embracing observations on calculus, sea-scurvy, consumption, catarrh, and fever, and conjectures on other objects of physiology and pathology, he showed his tendency to found medical science upon chemistry. The most popular of all his works, and that which best reveals his imagination and taste, as well as judgment, was his "History of Isaac Jenkins," a striking picture of the reformation of a drunkard, of which more than 40,000 copies were rapidly sold. Wishing to test his views by experiment, he was enabled, in 1798, to establish a pneumatic institution at Bristol; and in making his arrangements, he was much assisted by his father-in-law, the versatile Richard Lovell Edgeworth. His assistant was Sir Humphry Davy, then a young man; and the first discoveries of this celebrated chemist were made in the laboratory of this institution. The numerous publications of Dr. Beddoes, at this time, had reference to his favorite theory of the efficacy of the permanently elastic fluids, and of the possibility of curing all diseases by breathing a medicated atmosphere. He was especially sanguine in his expectations from the brilliant discovery, by Davy, of the respirability and intoxicating qualities of nitrous oxide; and he issued treatises in rapid succession till near the time of his death. None of his manifold efforts to found the art of medicine upon philosophical principles were entirely successful; yet his imaginative speculations had great influence in promoting the more cautious inquiries of others.

BEDDOES, THOMAS LOVELL, son of the preceding, an English poet and man of science, born at Clifton, near Bristol, in 1802, died at Frankfort-on-the-Main, in 1849. He was nearly related to the authoress Maria Edgeworth, and his family connections recommended him favorably to the world of letters. His first work, the "Bride's Tragedy," was published at London when he was but 20 years of age. The criticisms and sketches by Hazlitt and Charles Lamb had somewhat accustomed the English public to the strong and buoyant grace of the old dramatists, and had thus prepared the way for a young author whose every page showed his alliance by sympathy and genius with Massinger, Decker, Marlowe, and other writers of the affluent Elizabethan days. The "Bride's Tragedy" was received with very general admiration, not unmixed with criticisms of its youthful exuberance and altogether unartistic construction. Professor Wilson uttered the prevalent judgment in saying that English tragedy might expect to revive again in this passionate, thoughtful, and independent author. But Mr. Beddoes sought to possess the stage as well as the closet, and to write dramas instead of dramatic poems, and was vexed that theatrical managers rejected his plays. He inherited from his father an intense fondness for scientific study, especially in the direction of human physiology, and passing over to the continent he became a

sort of amateur anatomist in German universities. He finally accepted a professorship at Zurich, and it was there, while engaged in a dissection, that he received a slight wound in the finger, by the consequences of which his life was prematurely ended. After his death his poetical remains, with notes and a memoir, were published at London (1851), in 2 vols., 12mo. The principal of these were 2 tragedies, entitled "Death's Jest Book" and the "Second Brother," both of which abound in ærial fancies, condensed and passionate eloquence, and profound thoughts, and are among the most extraordinary poetical compositions of the present age. His minor poems, though peculiarly sad and sombre, bear proofs of a rich and energetic, though somewhat fantastic nature.

BEDE, or BEDA, commonly called the venerable Bede, was an English monk, born in Wearmouth, near the mouth of the Tyne, about A. D. 672, died in May, 785. He lived in that most interesting period of the ecclesiastical history of England, just after the triumph of the Roman over the Scottish church, and in the infancy of the Anglo-Saxon church. He was sent to the monastery of St. Peter, under the care of Abbot Benedict, at the age of 7 years, where he remained 12 years, at the expiration of which time he was ordained a deacon. At 30 years of age he took orders as a priest. His fame seems already to have reached the continent, for it is related that Pope Sergius desired Bede might be sent to him, for an assistant in ecclesiastical discipline. Bede, however, declined, being anxious to devote himself to the compilation of the ecclesiastical history of the English nation—a work which he himself tells us he completed when he was 59 years old. He also published several other works, and acquired so great celebrity that many of the most eminent priests, including the archbishop of York, came to consult him in ecclesiastical matters. By his devotion to study and seclusion he laid the foundation of consumption, of which he finally died. It is related of him that he continued, even to the last, to perform the duties of his station, and also to prosecute his favorite task of writing. Especially in the closing days of his life was he anxious to complete two tasks which he had commenced, viz.: the translation of the Gospel of John into Anglo-Saxon, and the compilation of some extracts from St. Isidore. On the last night before his death he continued dictating to his amanuensis, until his increasing weakness attracted the attention of that person, who said to him: "There remains now only one chapter, but it seems difficult for you to speak." "It is easy," said Bede; "take your pen, dip it in the ink, and write as fast as you can." At length, when it was nearly completed, Wilberch, the amanuensis, recalled his attention after an interruption, saying, "Master, there is now but one sentence wanting;" upon which Bede bade him write quickly. When Wilberch said, "Now it is finished," Bede replied, "Thou hast said the truth, *consummatum est*." He immediately de-

sired to be placed where he had been accustomed to pray. This being done, he exclaimed, "Glory be to the Father, and to the Son, and to the Holy Ghost," and peacefully expired. He was interred in the church of his own monastery, at Jarrow, but his remains were subsequently removed to Durham, and placed in the same coffin with those of St. Cuthbert. Bede was a man of extensive and profound erudition for his time. His mind was systematic in its thought, and simple and perspicuous, though not elegant, in its modes of expression. His *Historia Ecclesiastica*, as well as all his other works, was written in Latin. The history was printed in 1474. That edition is rare, there being only two copies known in England. There have been 8 English translations of it. It contains little of the civil and political history of England. Indeed, this neither came within the design nor the taste of Bede. His province was emphatically religious. The term "Venerable" was given to him soon after his death.

BEDEAU, MARIE ALPHONSE, a French general, distinguished in the Algerine wars, and in the events attending and following the revolution of 1848, born at Vertou, near Nantes, Aug. 19, 1804. The son of a naval officer, he was educated in the military schools of La Flèche and St. Cyr, and entered the army as lieutenant in 1825. He made the Belgian campaigns of 1831 and 1832 as aide-de-camp of Gen. Gérard, and at the siege of Antwerp was appointed to confer with the Dutch general Chassé, who was maintaining himself in the citadel. In 1836 he was sent to Algeria as commander of a battalion in the foreign legion, and for the valiant part which he took in storming Constantine, he was made commandant of that city, and was advanced to the rank of first lieutenant. In 1838 he was transferred to the supreme command of Bougliah, and after several engagements with the Berbers or Kabyles, was promoted to a colonelcy in the 17th regiment of light infantry. He displayed remarkable energy in the expedition of Cherchell, where he sustained almost daily conflicts, was twice wounded, and at the pass of Muzaila maintained himself for 4 hours with 800 men against a force of 10,000 regular troops and Kabyles, led by Abd el Kader himself. He was made brigadier-general in 1841. Being intrusted by Marshal Bugeaud with the direction of military and political affairs on the borders of Morocco, he defeated Abd el Kader in 3 engagements, and forced him to evacuate the province of Tlemcen, with the civil organization of which he then occupied himself. In the war with Morocco, in 1844, he took an active part in the series of victories which terminated in the battle of Ialy. In 1845 he received the command of the province of Constantine, directed the expedition of Aures, defeated the rebellious tribes, and subjected the province of Oran. In 1847 he was made governor of Algeria. He was in Paris at the outbreak of the revolution of February in the next year, and repaired to the

Tuileries to place himself at the disposal of the king. He was ordered by Bugeaud, who had received the command of the army, to lead a column from the Tuileries to suppress the insurrection on the Boulevards; but the revolutionary movement proving much stronger than had been anticipated, and the national guard itself hesitating, it was with difficulty that he could execute the order, which he subsequently received, to retreat to the palace. After the flight of Louis Philippe, he was appointed to the command of all the troops stationed around the Tuileries, and when the chamber of deputies was threatened by the insurgents, he occupied the passage way and would have been able to bar it, but he received from Barrot, the president of the council of ministers, orders to abstain from using force. Being therefore obliged to let the insurgents pass, the chamber was dissolved. Under the provisional government, he declined the appointment of minister of war, and accepted the command of the army of Paris. During the insurrection of June, 1848, he was severely wounded in one of the first actions. He was elected to the national assembly, of which body he became vice president, and afterward held the same position in the legislative assembly. He was sent in 1849 to assist the army of Gen. Oudinot in pressing the siege of Rome, but learning at Marseilles the success of the French troops, he returned to Paris. Though originally a legitimist, he adopted liberal views, and refusing the oath to Louis Napoleon, retired to Belgium, and has since lived in Brussels.

BEDEHOUSE (Saxon, *bed*, a prayer), an ancient term for an almshouse, so called from the poor being supposed to offer up prayers for the good of the founders' or benefactors' souls. The term is still in local use in Scotland.

BEDELL, GREGORY T., D.D., an eloquent clergyman of the Protestant Episcopal church, formerly rector of St. Andrew's, Philadelphia. He was born on Staten Island in 1798, graduated at Columbia college in 1811, ordained by Bishop Hobart in 1814, stationed at Hudson, on the North river, in 1815, removed to Fayetteville, N. C., 1818, and finally to Philadelphia, where he died in 1884. His sermons were remarkable for simplicity and point: they were seldom written in full. Thirty of them have been published, with a memoir, by the Rev. Dr. Tyng.

BEDELL, WILLIAM, Anglican bishop of Kilmore, in Ireland, born at Black Notley, Essex, in 1570, died at Kilmore Feb. 7, 1642. He was secretary to Sir Henry Wotton, on his embassy to Venice, 1604. Having acquired the Italian language, he translated the "Book of Common Prayer," and presented it to the clergy who were at the time appointed by the republic of Venice to preach against the papal power and pretensions. On his return to England, he remained in great retirement for some time, but was at length presented to a living in Norfolk. In 1627 he was elected provost of Trinity

college, Dublin, which he declined until the king's orders made his acceptance imperative. He was next made bishop of Kilmore and Ardagh. Visiting his see, he found the ecclesiastical property in a ruinous condition, through the malversations and neglect of the officials, and at first he was unable to obtain sufficient income from the see even for his own support. He obtained the restitution of a small part of the lands of the diocese, and finding the charge too onerous for him, he resigned the see of Ardagh, and addressed himself to the task of reforming the clergy, and of introducing the Protestant worship into Ireland. For this latter purpose, he studied Irish, and had the prayer book with the homilies of Chrysostom and Leo in praise of reading the Scriptures translated, and put into the hands of the people. At the breaking out of the great Irish rebellion of that period, Bishop Bedell was at first left in quiet possession of his see and residence; a respite which he used for protecting and maintaining the distressed Protestants. Soon, however, his palace was invaded, and himself, his two sons, and son-in-law, were carried off to a stronghold of the rebels, where all except the bishop himself were put in fetters. The exposure to the weather during the winter, for the place of his confinement was in a ruinous condition, brought on a severe fever, of which soon after his release he died. At his burial a concourse of the opposite creed attended to pay respect to his remains, and after the ceremony a volley was fired over his grave by the rebels.

BEDESMAN (Saxon, *bed*, a prayer), was a common suffix to the signature at the end of English letters in the 15th and 16th centuries, and equivalent to petitioner. The Paston letters, 1460-1480, furnish many examples. Sir Thomas More, writing to Cardinal Wolsey, styles himself "Your humble orator and most bounden bedesman." Margaret Bryan, the governess of Princess Elizabeth, signs herself in writing to a superior, "Your daily bede-woman."

BEDFORD. I. A county in the south part of Pennsylvania; area about 1,000 square miles. The surface is broken by numerous ridges of the Alleghanies, whose principal chain forms the W. border of the county. One-half of the county is unfit for cultivation, but in this portion iron ore is abundant. In 1850 it yielded 248,302 bushels of wheat, 206,844 of corn, 240,803 of oats, 18,094 tons of hay, and 846,587 pounds of butter. There were 63 mills, 17 factories, 20 tanneries, 52 churches, 8 newspaper offices, and 5,229 pupils attending public schools. It has abundant water power; pop. 23,052. Capital, Bedford. II. A county in the southern part of Virginia, at the eastern base of the Blue Ridge; area, 504 sq. m. Its surface is hilly and mountainous, and the soil fertile. Tobacco, Indian corn, wheat, and live stock are its principal products. In 1860 it yielded 602,362 bushels of corn, 178,990 of wheat, 294,852 of oats, 1,955,486 pounds of tobacco, and 238,233 of butter. There were 40 churches,

and 638 pupils attending public schools. Its real estate was valued in 1850 at \$3,071,563; in 1855 at \$4,849,287, showing an increase of 57 per cent. Capital, Liberty. Pop. in 1850, 24,080; slaves 10,061. III. A central county of Tennessee; area, 550 sq. m. The surface is undulating, and extensively cultivated; the soil is fertile. The county is intersected by Duck river, and by a turnpike and a railroad to Nashville. Productions in 1850, 1,521,867 bushels of Indian corn, 270,182 of oats, 145,492 pounds of butter, and 86,872 of wool. There were 40 churches, 1 newspaper office, and 2,056 pupils attending public schools. Capital, Shelbyville. Pop. 21,512, of whom 16,010 are free, and 5,502 slaves.

BEDFORD, a post borough, capital of Bedford co., Pa., 200 miles W. of Philadelphia, on the Raystown branch of the Juniata river. It is celebrated for its mineral springs, situated in a beautiful valley about $1\frac{1}{2}$ mile from the town, which are much frequented in the summer season by invalids and fashionable tourists. Pop. 1,203.

BEDFORD, or **BEDFORDSHIRE**, an inland county of England; area, 297,632 acres; pop. 124,478. Bedford, the shire town, and a parliamentary borough, is situated on the river Ouse, 45 miles from London. It has 4 Gothic parish churches, free and blue-coat schools, a hospital for a master and 10 poor brethren, and 58 almshouses. It has also a famous grammar school, founded in 1556, with 8 exhibitions of £80 a year each, to Oxford, Cambridge, and Dublin, open to the children of all resident householders. All these charities, with £800 distributed yearly in marriage portions, and £500 for decayed householders, are maintained by a bequest of Sir William Harpur, lord mayor of London in 1561. The income for these purposes is about £14,000 per annum. It returns 2 members to the house of commons, and furnishes the title of duke to the Russell family. Pop. 11,693.

BEDFORD, DUKE OF (JOHN PLANTAGENET, or, as Shakespeare calls him, Prince John of Lancaster), third son of King Henry IV., of England, and regent of France for the English, born in 1389, died at Rouen in France, Sept. 13, 1435. He was employed by his father in Scottish wars, distinguished himself as a warrior at the battle of Shrewsbury, received his ducal title under Henry V., and in the war with France was placed at the head of the forces in England, while the king himself fought abroad. Henry V. dying in 1422, and leaving an infant son as his successor, desired Bedford to be regent of France, and to maintain the conquests in that country; and the parliament immediately transcended the royal wish by making Bedford also protector of the kingdom and church of England, except during his absence beyond seas. The duke at once renewed the war against Charles VII., on French soil, after having by the liberation of the young king James of Scotland, made peace

with Scotland, and thus got rid for the time of a thorn in the side of England. He also consolidated his alliance with the wealthy and powerful principality of Burgundy, and with the duke of Brittany. Thus supported, he reduced the king of France to the last extremity by the disastrous battles of Crevant and Verneuil, and the complete conquest of that country by the English seemed impending. The withdrawal of the duke of Burgundy from the alliance did not check the good fortune of Bedford, and the kingdom of France was saved only by the marvellous career of Joan of Arc. The appearance of this maiden at the siege of Orleans forced the English to retreat; yet Bedford quickly gained new successes, broke the spell which had given confidence and enthusiasm to the French armies by repulsing Joan from the walls of Paris, and, in 1430, captured her in a sally from Compiègne. In effecting the tragic death of the peasant girl of Domremy, he was a principal agent. He died before the cause which he had so successfully maintained received any disaster from the opposition of the duke of Burgundy. Like many others of the descendants of John of Gaunt, he was a patron of literature and the arts, and he transferred from Paris to London a library of 900 volumes. A magnificent manuscript missal which he caused to be executed for his wife, was sold in 1833 for £1,100. The ducal dignity of Bedford, after having been extinguished for two centuries, was revived in 1694, and bestowed upon the house of Russell.

BEDFORD LEVEL, a district of England, consisting of an extensive tract of level country bounded N. E. by the German ocean, and on all other sides by highlands which encompass it like a horse-shoe. It embraces the isle of Ely, in Cambridge, and portions of Northampton, Huntingdon, Lincoln, Norfolk, and Suffolk—its length being about 60 miles, its breadth 40 miles, and its area probably about 400,000 acres. There is good reason to suppose that at the time of the Roman invasion the surface of the district was much lower than it is now, and that it was covered by one of those vast forests into which the natives used to retreat, and which it was the general policy of the conquerors to destroy. The subjugated people were employed in felling the trees, and erecting great embankments to keep out the sea. In the 8d century, the emperor Severus built roads through the marshes, one of which, from Peterborough to Denver, was 60 feet wide and made of gravel 3 feet deep. It is now covered by from 3 to 5 feet of soil. For many years the district was fertile and well cultivated, and Henry of Huntingdon, who wrote in the 12th century, describes it as being "very pleasant and agreeable to the eye, watered by many rivers which run through, diversified with many large and small lakes, and adorned with many woods and islands." But in 1236, during a violent storm, the sea burst through the embankment at Wisbeach and other places,

doing immense damage to life and property, and reducing the surviving inhabitants to great distress. A second accident of the same kind occurred in 1253, and a third a few years later. The evil, moreover, was sometimes aggravated by improper measures taken for its cure, so that in the course of time the greater part of the district became a vast morass, some portions of which were covered with pools of stagnant, putrid water from 10 to 20 feet deep. Efforts to drain it were set on foot in the reigns of Henry VII., Elizabeth, and James I., but all failed. In the time of Charles I., the earl of Bedford, after whom the district was named, made a partially successful attempt, which was renewed in 1649, by his son, who brought the work to a close and received 95,000 acres of the reclaimed land as a compensation. A regular system for preserving and improving the drained lands was now inaugurated. A corporation for their management, consisting of a governor, 6 bailiffs, 20 conservators, and a commonalty, was chartered and is still kept up. Of late years important improvements have been made in the old system of drainage, which in some respects proved defective. The reclaimed lands produce fine crops of grain, flax, and cole seed, but the harvests have occasionally suffered by fresh inundations, one of which in 1841 involved a loss of over £150,000.

BEDJA, a district of Nubia, extending along the W. shore of the Red sea, from Suakin to Cape Camol. The Bisharya, a tribe of Bedouins, are almost the only inhabitants.

BEDLAM, a corruption of Bethlehem, the name of a religious foundation which was granted in 1547 by Henry VIII. to the corporation of London, and by them applied to the purpose of a hospital for the insane. The place was originally within the city boundaries, but in 1814, a new building was erected in St. George's fields, on the south side of the Thames, which was called New Bethlehem, or, vulgarly, Bedlam. The patients, who had been discharged partially cured, and went about begging, were called Bedlam beggars, or Tom-o'-Bedlams.

BEDOUINS, BEDAWKEN, men of the desert, the aborigines of Arabia, and descendants of Ishmael. They seem never to have been conquered. A few expeditions against them in different ages of the world have succeeded in chastising them and repressing their too great energy, but their retreat into their native deserts has effectually stayed the progress of the invaders. Mehemet Ali, in his war against the Wahabees, was perhaps their most successful assailant. On their part, they have been marauders over neighboring territories, from the earliest periods of history; and in the 7th century, they were stirred up by the doctrines of Mohammed to a great pitch of excitement. Their innate love of war, and the ardor of a new faith, made them irresistible, and carried them through Asia and to the westernmost point of southern Europe. They are found throughout all northern Africa, on the continental

shore of the Persian gulf, and in the plains of Syria and Mesopotamia. Their essential characteristic is that they are dwellers in tents, live by their flocks and herds, and that their hand is against every man. They are ignorant, fierce, and revengeful, but scrupulous in honor or honesty, and of depraved morals. They are engaged in constant warfare with each other, and are enemies to the stranger and the wayfarer. Their greatest virtue is their hospitality, and even this is very questionable; its inviolability has been greatly exaggerated. Instances certainly are not rare of magnanimous conduct, when the sacred rights of asylum have been observed not only in the letter but in the spirit. Such cases are the themes of ceaseless praise in the songs and narratives of the Bedouins, and the very praise lavished on them is rather a proof of their rarity and of their personal and heroic character.—In personal appearance the Bedawi is under the middle size, spare and wiry, capable of sustaining great fatigue and continued exposure to the fiery sun of his native clime. His clothing is oftentimes reduced to a single garment, a woollen gown bound round his waist with a girdle, in which he carries his weapons and his pipe. The better class wear a head covering, or *haik*, either a handkerchief folded corner-wise or a woollen headpiece, and bound round the top of the head with a cord. The under-garments of linen or cotton and a flowing cloak of the finest and whitest wool, a handsome belt and arms, complete the attire. In complexion they are dark to a brown black. This depends on exposure, for the women are some shades fairer. They practise both polygamy and slavery. Their amusements are story-telling, to which they are passionately devoted, throwing the spear, and other mimic war, smoking, and coffee-drinking. The story-telling and the pipe are an unfailing resource, although some of them, the Somaalis and Wahabees for example, detest tobacco. The general government of the Bedouins is patriarchal; some families are held in particular reverence, and the heads of these families are sheiks. The Marabouts, or holy men, exercise great influence, but this is more of a personal character. The emir, or sultan, is elective. If the son inherits his father's qualifications, he frequently succeeds to his title, and is chosen by the sheiks, who are propitiated by gifts. They live on the milk of their flocks, cultivating sometimes a small crop of barley or other grain, more frequently purchasing food and ammunition in exchange for their live stock. The Bedouins of the desert are distinct from the Arabs of the towns, who carry on commercial undertakings, and live in a peaceable manner. The most decidedly nomadic are the inhabitants of the desert south of Atlas, the Arabian tribes, and those which inhabit the desert of Sinai. The Bedouins of Arabia acknowledge the nominal supremacy of the sultan of Turkey, whose authority is so weak, however, that he is obliged to make an annual present to his loyal subjects, in order to

secure the free transit of the caravan to Mecca, and even this bridge of gold does not always make a way for the caravan, for refractory individuals will sometimes levy black mail. Those within the bounds of Mehemet Ali's vigorous rule, were brought to a sense of his superiority, and their country was perfectly safe in his lifetime. The same can scarcely be said under the government of his weaker successors.

BEDRIAUM, in ancient geography, a small town or village of Cisalpine Gaul, on the high road between Verona and Cremona. Its precise location is uncertain, but it was probably situated not far from where the town of Canneto now stands. It is famous for 2 battles fought in its neighborhood. The 1st was A. D. 69, when the forces of the emperor Otho were completely defeated by those of Vitellius, under Cæcina and Fabius Valens. The 2d was a few months afterward, when the army of Vitellius was beaten near the same place, by the troops of Vespasian, under Antonius Primus. In both instances the attacking army advanced from Bedriacum, but the battle, in each case, actually took place nearer to Cremona than to that village.

BEDSTEAD. See **BED**.

BEE (*apis mellifica*, Linn.), a social insect of the order *hymenoptera*, family *anthophila* and section *apiaria* of Latreille; this species is probably of Asiatic origin, whence it has spread over Europe and has been imported to America, where it exists in a wild state in great numbers, and far from human habitations. The bee has four membranaceous naked wings, the upper being the larger; the mouth is furnished with 2 strong mandibles and 4 palpi, largest in the working bee, and used not so much in eating as in breaking hard substances in their various labors; the teeth, concave scales with sharp edges, are attached to the ends of the jaws and play horizontally. For taking up liquids it has a long flexible proboscis or trunk, performing the office of a tongue, though it is formed by a prolongation of the under lip; it is solid, and not tubular like the trunks of other hymenopterous insects; the trunk is supported on a pedicle, and is protected by a double sheath; the central portion, which appears like a thread or silky hair, under the microscope is seen to terminate in a sort of button fringed with hairs, and the whole organ to its very base is surrounded with similar fringes, which are admirably adapted for licking up honey or other fluid aliment. The eye is large, composed of a great number of 6-sided facets thickly studded with hairs; there is 1 on each side of the head, and also between the antennæ 3 small bright spots considered by Swammerdam and Réaumur as eyes; from the fact of bees recognizing their hives from long distances, and flying in a straight line toward them with the greatest rapidity, it would seem that the sense of vision is very acute; at the same time we see them running their heads against the hive, and actually feeling their way to the door with their antennæ; so that

their composite eyes are probably fitted only for distant vision. Whether the spots described by Swammerdam are eyes, or not, it seems that the antennæ chiefly guide the bees at night and in the vicinity of near objects. The antennæ are composed of 18 articulations in the males, and of 12 in the females; from their great flexibility and constant motion most of their impressions from without are doubtless received through these; by them every object is examined, many of the operations of the hive performed, as building the comb, storing the honey, feeding the larvæ, and ascertaining the presence and wants of the queen; by them also their mutual impressions are conveyed, as by a mute language—they are exquisite organs of touch, and their removal completely changes the instincts of both workers and queen. The legs are 6 in number; in the hind pair of the workers the middle portion is hollowed into a triangular cavity or basket, surrounded by a margin of thickly set hairs; in this receptacle are carried the pollen, propolis, and other hive materials; at the end of the feet are little hooks by which they adhere to the hive, and to each other during the wax-secreting process; the other pairs of feet have a pencil of hairs on the tarsi by means of which the pollen is collected, and brushed off from their bodies on arrival at the hive. The bee has two stomachs; the first is a large membranous bag, pointed in front, for the reception and retention of the honey; no digestion takes place in this, the analogue of the crop of birds; its walls are muscular and capable of throwing back the honey into the mouth for deposition in the cells or distribution to the working bees; digestion is performed in the second stomach, which is of a lengthened cylindrical shape, communicating with the first stomach, and with the intestine, by a projecting valvular apparatus, with a very small opening, preventing all regurgitation of the food. The muscular strength of bees is very great, and their flight is rapid and capable of being long sustained.

—Notwithstanding the cultivation of the hive-bee from the earliest antiquity, their history was little more than a series of conjectures until the invention of glass hives in 1712, by Maraldi, a mathematician of Nice, enabled naturalists to study the indoor proceedings of the bee; this invention was taken advantage of by Réaumur, who laid the foundation of the more recent discoveries of Hunter, Schirach, and the Hubers. A hive of bees consists of three kinds: females, males, and workers; the females are called queens, not more than one of which can live in the same hive, the presence of one being necessary for its establishment and maintenance; the males are called drones, and may exist in hundreds and even thousands in a hive; the workers, or neuters, as they have been called from the supposition that they belonged to neither sex, are by far the most numerous. The queen lays the eggs from which the race is perpetuated; the males do no work, and are of no use except to impregnate the females, after

which they soon die or are killed; the workers collect the honey, secrete the wax, build the cells, and feed and protect the young. The females and workers have a sting at the end of the abdomen, which is absent in the males; this formidable weapon consists of an extensile sheath, enclosing two needle-shaped darts of exceeding fineness, placed side by side; toward the end they are armed with minute teeth, like those of a saw, whence it happens that the animal is frequently unable to withdraw the sting from an enemy that it has pierced, causing its own as well as its victim's death; the sting is protruded by several muscles so powerful that it will penetrate $\frac{1}{2}$ of an inch into the thick skin of the human hand. When the sting enters the flesh, the acrid poison is squeezed into the wound from a bag near its base; the poison is a transparent fluid, with a sweetish and afterward acrid taste, and an acid reaction; it is of so active a character that a single sting almost instantly kills a bee; animals have been killed and men nearly so by the stings of an enraged colony whose hive had been upset. The queens are more peaceable and less disposed to sting than the workers. These three kinds of bees are of a different size and may be easily recognized; the males are of the heaviest flight. The queen bee is the largest, being $8\frac{1}{4}$ lines in length, the males being 7, and the workers 6; her abdomen is longer in proportion, and has 2 ovaria of considerable size; her wings are so short as hardly to reach beyond the third ring, and her color is of a deeper yellow. She is easily recognized by the slowness of her march, by her size, and by the respect and attentions paid to her; she lives in the interior of the hive, and seldom departs from it unless for the purpose of being impregnated or to lead out a new swarm; if she be removed from the hive, the whole swarm will follow her. The queen governs the whole colony, and is in fact its mother, she being the only breeder out of 20,000 or 30,000 bees; on this account she is loved, respected, and obeyed, with all the external marks of affection and devotion which human subjects could give to a beloved monarch. The impregnation of the queen bee was long a subject of uncertainty; it is now known that this never takes place within the hive, and that if she be confined she always remains sterile, even though surrounded by males. To accomplish it the queen leaves the hive and flies high into the air; after an absence of about half an hour she returns with the most unequivocal evidence of sexual union, having robbed the male of the organs concerned in the operation; the drone, thus mutilated, soon dies—this has been repeatedly observed; from this fact Huber infers the necessity of a great number of males being attached to a hive in order that the female may be almost certain to meet one in her flight; the warmest part of a sunny day is usually selected by the female for this excursion. When impregnation occurs late in the autumn the laying of the eggs is delayed by the cold weather until

the following spring, so that the ova are ready to come forth in March; but the young queen is capable of laying eggs 86 hours after impregnation. Before depositing an egg she examines whether the cell is prepared to receive it and adapted for the future condition of the grub, for queens, males, and workers have cells specially constructed for them; the eggs producing workers are deposited in 6-sided horizontal cells; the cells of the drones are somewhat irregular in their form, and those of the queens are large, circular, and hang perpendicularly. When the cells are ready, the queen goes from one to the other, with scarcely any repose, laying about 200 eggs daily; the eggs first laid are those of workers, for 10 or 12 days, during which the larger cells are in process of construction; in these, after acquiring a very large size, she lays male eggs for 16 to 24 days, less numerous than those of the workers in the proportion of about 1 to 30. The royal cells, if from the productiveness of the season and the number in the hive it is determined to bring out another queen, are now commenced; these are of large size, an inch deep and $\frac{1}{4}$ of an inch wide; during their construction the queen lays the eggs of workers, and, when they are finished, she deposits a single egg in each at 1 or 2 days' interval, worker eggs being laid in this interval. When the eggs are laid the workers supply the cells with the pollen of flowers for the food of the larvæ; the pollen is mixed with honey and water, and partly digested in the stomach of the nursing bees, and distributed of different qualities according to the age of the young. The eggs are of a bluish white color, of a lengthened oval shape, slightly curved; in a proper temperature they are hatched in 3 days; the larvæ are small white worms without feet. The workers remain 5 days in this state, the males $6\frac{1}{2}$, and the females 5; at the end of this time the mouth of the cell is closed by a mixture of wax and propolis, and the larvæ begin to spin a silken envelope, or cocoon, which is completed in 36 hours; in 3 days more the larva changes into a pupa or chrysalis, and on the 20th day it emerges from its prison a perfect worker; the males come forth on the 24th day. The color of the bee just out of its cell is a light gray; it requires 2 days to acquire strength for flying, during which it is caressed and plentifully fed by the nurses. The same cell may bring several workers to maturity; when the insect comes out the cell is cleaned, the web being left to strengthen the sides; the royal cells are never used but once, being destroyed when the queen escapes. The eggs and larvæ of the royal family do not differ in appearance from those of the workers; but the young are more carefully nursed, and fed to repletion with a more stimulating kind of food, which causes them to grow so rapidly that in 5 days the larva is prepared to spin its web, and on the 16th day becomes a perfect queen. But, as only one queen can reign in the hive, the young ones are kept close prisoners, and carefully guarded against the at-

tacks of the queen-mother, as long as there is any prospect of her leading another swarm from the hive; if a new swarm is not to be sent off, the workers allow the approach of the old queen to the royal cells, and she immediately commences the destruction of the royal brood by stinging them, one after the other, while they remain in the cells. Huber observes that the cocoons of the royal larvæ are open behind, and he believes this to be a provision of nature to enable the queen to destroy the young, which, in the ordinary cocoon, would be safe against her sting. When the old queen departs with a swarm, a young one is liberated, who immediately seeks the destruction of her sisters, but is prevented by the guards; if she departs with another swarm, a second queen is liberated, and so on, until further swarming is impossible from the diminution of the numbers or the coldness of the weather; then the reigning queen is allowed to kill all her sisters. If two queens should happen to come out at the same time, they instantly commence a mortal combat, and the survivor is recognized as the sovereign; the other bees favor the battle, form a ring, and excite the combatants, exactly as in a human prize-fight. The male bee, or drone, may be known by the thicker body, more flattened shape, round head, more obtuse abdomen containing the male generative organs, the absence of the sting, and the humming noise of their flight; they produce neither wax nor honey, being idle spectators of the labors of the workers, who support them; they comprise about $\frac{1}{3}$ or $\frac{1}{4}$ of the whole number of a hive in the spring, when they are most numerous; their use is only to impregnate the females, and, secondarily, to supply food to the swallows and carnivorous insects which prey upon them when they take their mid-day flights. When the queens are impregnated, and the swarming has ceased, the workers, in July or August, commence an indiscriminate attack upon the drones, chasing them into the bottom and corners of the hive, killing them with their stings, and casting out the dead bodies; this destruction extends even to the eggs and larvæ of males. If a hive is without a queen, the males are allowed to survive the winter. The working bees, or neuters, are the smallest, with a lengthened proboscis, the basket conformation of the posterior pair of legs, and the apparent absence of generative organs; rudiments of ovaries have recently been discovered on minute dissection, which explain some remarkable facts in the economy of the hive. The workers have been divided by Huber into nurses and wax-workers; the former are the smallest and weakest, ill adapted for carrying burdens, whose business it is to collect the honey, feed and take care of the grubs, complete the cells commenced by the others, and to keep the hive clean; the latter take the charge of provisioning the hive, collecting honey, secreting and preparing wax, constructing the cells, defending the hive from attack, attending to the wants of

the queen, and carrying on all the hostilities of the community. The number of the workers is from 5,000 or 10,000 to 50,000, according to the size of the hive; they form about $\frac{2}{3}$ of the whole; they are armed with a sting, and are easily excited to use it. They are sometimes called neuters, as if they were of neither sex; it is now established that the larvæ of the workers and of the females do not differ; that the queens lay only two kinds of eggs, one destined to produce the males, and the other capable of being converted, according to circumstances, into workers or queens; in other words, that the workers are females, in which the generative organs are not developed. Experiments amply prove that on the loss of the queen the hive is thrown into the greatest confusion; the inquietude which commences in one part is speedily communicated to the whole; the bees rush from the hive, and seek the queen in all directions; after some hours all becomes quiet again, and the labors are resumed. If there be no eggs nor brood in the combs, the bees seem to lose their faculties; they cease to labor and to collect food, and the whole community soon dies. But, if there be brood in the combs, the labors continue as follows: having selected a grub, not more than 3 days old, the workers sacrifice 3 contiguous cells that the cell of the grub may be made into a royal cell; they supply it with the peculiar stimulating jelly reserved for the queens, and at the end of the usual 16 days the larva of a worker is metamorphosed into a queen. This fact, which rests on indisputable authority, is certainly a most remarkable natural provision for the preservation of the lives of the colony. While a hive remains without a queen swarming can never take place, however crowded it may be. The possibility of changing the worker into a queen is taken advantage of in the formation of artificial swarms, by which the amount of honey may be indefinitely increased. In a well-proportioned hive, containing 20,000 bees, there would be 19,499 workers, 500 males, and 1 queen.—The food of bees consists principally of two kinds—the honeyed fluids and the pollen of flowers; they also eat honey-dew, treacle, sirup, and any saccharine substance. They lick up honey and fluid substances by their long proboscis from the blossoms of various flowers; the mignonette and clover afford honey of remarkable fragrance and in great abundance. It is inferred that bees have an imperfect sense of taste and smell from their collecting honey indiscriminately from sweet-scented and offensive flowers; it is well known that in some places their honey acquires poisonous qualities from the flowers of different species of laurel, thorn-apple, azalea, and poison-ash; many mysterious cases of sickness have been traced to the consumption of such poisoned honey, and even the bees are sometimes destroyed by the vegetable poisons which they imbibe. During the spring, and until late in the autumn, bees collect the pollen from the anthers of

flowers by means of the hairs on their legs, and, after forming a ball, transport it in their basket to the hive for the food of the young brood; this pollen consists of small capsules which contain the fecundating principle of flowers, and is so abundant that the bees of a single hive will often bring in a pound daily; hence some agriculturists have supposed that the bees diminished the fecundity of plants, by abstracting the pollen, when, on the contrary, they essentially promote it, by transporting the fecundating principle from plant to plant. Insects are among nature's most efficient instruments for the spread of vegetation; by them are produced the greater part of the hybrid varieties of flowers. Honey-dew is a saccharine fluid discharged from the tubes at the extremity of the body in the *aphides*, or plant-lice; these herd together on plants, and become so gorged with sap that they are obliged to eject the honeyed fluid; this falls on the leaves and dries, forming honey-dew, eagerly sought after by bees and ants; the same name has been given to a sweet exudation of the sap from the leaves of plants in dry weather. Bees require considerable water, but they are not particular about its purity; indeed, the more stagnant and putrid it is the better they seem to like it; it is well known that they are very fond of congregating about public urinals, as if the pungent ammoniacal salts were grateful to them. The food of the queen bee has been subjected to chemical analysis by Dr. Wetherill, of Philadelphia; that of the royal grubs is a kind of aesculent jelly, thick and whitish, becoming more transparent and saccharine as the larva increases in size; it has been shown by Huber to consist of a mixture of honey and pollen, modified by the workers; the former appears amorphous under the microscope, is heavier than water, of the consistency of wax, sticky and elastic; it consists of wax, albumen, and protein compounds, and is therefore properly called bee-bread; it contains albuminous compounds, which would probably prove, on analysis, similar to the gluten of wheat. Honey alone is not sufficient for the support of bees; they require nitrogenized substances, like pollen, for the body, as well as honey and non-nitrogenized food. Wax is secreted in pouches or receptacles, in the abdomen of the working bees only, lined with a membrane arranged in folds like a 6-sided network; it accumulates in these until it appears externally in the form of scales between the abdominal rings; these plates are withdrawn by the bee itself, or some of its fellow-workers, and used for building and repairing the cells. The formation of wax is the office of the wax-workers, which may be known from the nurses by the greater size and more cylindrical shape of the abdomen, and larger stomach; the secretion goes on best when the bees are at rest, and accordingly the wax-workers suspend themselves in the interior in an extended cluster or hanging curtain, holding on to each other by the legs; they remain

motionless in this position about 15 hours, when a single bee detaches itself, and commences the construction of a cell, and the others come to its assistance and begin new cells. The quantity of wax secreted depends not at all on the pollen consumed, but on the consumption of honey; when bees are fed on cane sugar they form wax with more difficulty than when they are fed on grape sugar; the former is not so readily decomposed, but may be changed into the latter in the bee's body by the absorption of 2 equivalents of water. According to Liebig, an equivalent of starch is changed into fat by losing 1 equivalent of carbonic acid and 7 equivalents of oxygen; and Dr. Wetherill suggests that wax, which bears a great analogy to fats, may be derived from honey in a similar manner. Wax, composed of cerine and myricine, is represented chemically by $C_{44}H_{88}O_{16}$, and anhydrous grape sugar by $C_{12}H_{22}O_{11}$; so that 8 equivalents of grape sugar would yield 1 equivalent of wax by the loss of 2 equivalents of carbonic acid, 2 of water, and 28 of oxygen.—Bees breathe by means of air-tubes, which open externally on the corae; experiments show that they soon perish in a vacuum or under water, and that a constant renewal of atmospheric air is necessary for their well-being. The condition of a hive, filled with many thousand active and crowded bees, and communicating with the outer air only by a small opening at the bottom, and that usually obstructed by the throng passing in and out, is very unfavorable for the maintenance of a pure air; the black hole of Calcutta is the only human receptacle which can be compared to it; a taper is very soon extinguished in a globe of the dimensions and with the aperture of a bee-hive, and yet these insects, as easily suffocated as any other, get along very well, and their respiration is accompanied by the usual absorption of oxygen and excretion of carbonic acid gas. With all this closeness of the air in the hive, direct examination has proved that it is nearly as pure as atmospheric air; neither the contents of the hive, nor the bees themselves, have any power of evolving oxygen, but the air is renewed through the door of the hive, where an inward current is produced, whenever required, by the rapid agitation of the wings of the bees. Some of the workers are always thus employed in ventilating the hive, which they do by planting themselves near the entrance, both inside and outside, and imitating the action of flying; in this way the impulse which would carry them forward in flight is exerted on the air, producing a powerful backward current; in this manner is explained the humming sound heard in the interior of an active hive, especially in the warmest days. From their active respiration the temperature of a hive is very high, varying from 78° to 84° F., and on some occasions rising to 106° ; they are very sensitive to thermometrical changes, the warm sun exciting them to vigorous action, and cold reducing

them to a torpid state.—The instincts, and, in the belief of many, the intelligence of the bee, are remarkably displayed in the preparation of the hive, the construction of the cells, and in the phenomena of swarming. The first thing done on entering a new hive is to clean it thoroughly, to stop all crevices, and lay the foundation for the comb. Wax is not the only material used by bees in their architecture; beside this, they employ a reddish-brown, odoriferous, glutinous resin, more tenacious and extensible than wax, called *propolis*, which they obtain from the buds of the poplar and birch and from various resinous trees. This adheres so strongly to the legs of the bee, that its fellow-laborers are obliged to remove it, which they do with their jaws, applying it immediately to every crevice and projection in the hive, to the interior of the cells, and to the covering of any foreign body too heavy for them to remove; in this way even large snails are hermetically sealed and prevented from imparting a noxious quality to the air. Bees will carry home many artificially prepared glutinous substances in their tarsal baskets. After the workers have secreted a sufficient amount of wax, the construction of the combs commences. These are formed into parallel and vertical layers, each about an inch thick, the distances between the surfaces of each being about half an inch for the passage of the bees. They may extend the whole breadth and height of the hive, consisting of thin partitions, enclosing 6-sided cells, about half an inch deep and a quarter of an inch in diameter. The bottom of each cell has the shape of a flattened pyramid with 8 rhombic sides, like the diamonds on playing cards; this gives the greatest strength and greatest capacity with the least expenditure of material. Maraldi had determined that the 2 angles of the rhomb should be $109^{\circ} 28'$ and $70^{\circ} 32'$ by mathematical calculation, and that by actual measurement they are 110° and 70° . There is nothing in the shape of the antennae, mandibles, or legs of the bee, which should determine these angles in the cells. The foundation is a solid plate of wax, of a semicircular form, in which a vertical groove is scooped out of the size of a cell, which is strengthened by further additions of wax; on the opposite side two other grooves are formed, one on each side of the plane opposite the first; after the bottom is formed, the walls are raised round the sides. The cells of the first row, by which the comb is attached to the roof of the hive, have 5 sides instead of 6, the roof forming one. The first cell determines the position of all that succeed it; and 2 are not, in ordinary circumstances, begun in different parts of the hive at the same time. The laborers follow each other in quick succession, each one adding a little to the work; when a few rows have been constructed in the central comb, two other foundation walls are begun, one on each side of it, at the distance of $\frac{1}{2}$ of an inch, and parallel to it, and then two others as the former are ad-

vanced; the comb is thus enlarged and lengthened, the middle being always the most prominent. If all their foundations were laid at the same time, it would be difficult for them to preserve their parallelism, which is perfect only at the last stage of the building process. Beside the vacancies between the cells, which form the highways of the hive, the combs are pierced with holes, to permit easy communication, and prevent loss of time in going round. The symmetry of the architecture of bees is more observable in their work looked at as a whole, than in its details, as they often build irregularly to adapt the structure to different localities and various unfavorable circumstances; different sized cells are made for the larvae of workers, males, and queens; those for honey and pollen magazines are twice as large as ordinary cells, and so placed that their mouths are upward, for the easier retention of their contents. These supposed defects are generally the results of calculation, and, when mistakes, are very soon remedied. The cells at first are whitish, soft, and translucent; but they soon become yellow and firmer, and quite dark in an old comb.—When a hive becomes too crowded, or for other reasons as yet not perfectly understood, preparations are made for the emigration of a swarm with a queen; scouts are sent out in advance to select a proper place for the new hive, and the workers are busy in collecting an extra quantity of provisions to be carried with them. When the weather is warm, and after a full stock of eggs has been laid, the old queen, unsuccessful in her attempts to destroy the royal brood, abdicates the throne which the first-born new queen will soon dispute with her. During the preparations, a great buzzing is occasionally heard, which suddenly ceases on the day of departure. When all is ready, the signal is given by the workers, and the queen, with all the departing swarm, rushes to the door, and rises into the air; they follow the queen, alighting with her in a dense cluster, and returning, if she does, to the hive. Cold weather, or even a passing cloud, will arrest the emigration until a warmer or brighter period. After a rest at their first landing-place, the swarm collects into a close phalanx, and flies in a direct line to the selected spot. The deserted hive is busily occupied in hatching out a new queen, which, in her turn, leads out a swarm; two or three will be sent off in a summer from an old hive. After the massacre of the males in July or August, the workers busy themselves in collecting stores for winter use; as the autumn advances, honey becomes scarce, and they are obliged to collect the sweet exudations from leaves, honey-dew, and also the juices of peaches and other sweet fruits, after the skin has been broken by birds, snails, and other insects; when all other resources fail, they do not scruple to attack weaker hives, and despoil them of their honey. The cold of winter reduces them to a torpid state, in which they remain until the warm days of spring. Bees recognize the per-

son of their queen; if a new one be given them, they will generally surround her, and suffocate or starve her to death, for it is very remarkable that the workers never attack a queen with their stings; if she be permitted to live 24 hours, she will be received as their sovereign. If a supernumerary queen be introduced, a ring is formed by the workers, and the two queens engage in mortal combat, the survivor having the right to reign. Huber discovered that if the fecundation of the queen be delayed beyond the 21st day of her life, she begins to lay the eggs of males, and produces no others during her life; she lays them indiscriminately in large and small, and even in royal cells; in the latter case, they are treated by the nurses as if they were royal grubs. Reim made the singular discovery of prolific workers, thus explaining the laying of eggs in hives destitute of a queen; but the eggs thus produced are always those of males; this is accounted for by their having passed their grub state in cells contiguous to the royal ones, and from having their generative organs partially developed by devouring portions of the stimulating royal food; how they become impregnated has not been ascertained.—The natural enemies of bees are numerous; among them may be mentioned wasps, hornets, spiders, dragon-flies, toads, lizards, woodpeckers, the bee-eater, and most insectivorous birds, rats and mice, ant-eaters, bears, and badgers. They seldom die a natural death; and the average duration of life cannot be more than a year; the whole population would be destroyed by their enemies, each other, and the severity of the weather, were it not for the surprising fecundity of the queen, who will lay, in temperate climates, as many as 60,000 eggs, and in warm regions, 3 times that number; a single impregnation is sufficient to fecundate all the eggs which a queen will lay for at least 2 years, and probably during her life. The most destructive and insidious enemy of the bee is a lepidopterous insect, of the group *crambida*, the *galleria cerana*, Fab., commonly called the bee or wax-moth; in its perfect state it is a winged moth, about $\frac{1}{2}$ of an inch long, with an expanse of wings of a little more than an inch; the females are the largest, of a dark gray color, tinged with purple-brown and dark spots; they remain quiet in the daytime, but in the evening, when the bees are at rest, they creep in at the door of the hive and deposit their eggs; when they are prevented from entering, they lay their eggs outside, from which the worm-like caterpillars hatched from them can easily creep in. These small and tender worms eat their way in all directions through the waxen cells; each one spins a tough silken tube, in which it lies concealed by day, and from which it comes out at night, devouring the wax within its reach; they grow to the size of an inch or more, gnawing the combs to pieces, and filling the hive with their dirty webs, until the bees, discouraged by the ravages of their unseen enemies, are obliged to aban-

don their hive with its brood and honey. The only way to secure a hive from these depredators is to destroy the worms and chrysalids at least once a week; the moths may be caught in a mixture of sweetened water and vinegar; the best constructed hives will not supersede the necessity of this constant watchfulness. Bees are subject to a fatal disease, which has been called dysentery, and which appears to be contagious; nothing can be done for it, except by cleanliness and ventilation, and by supplying them with wax. In Wells's "Explorations in Honduras" (New York, 1857), it is stated that there are in Olancho 14 distinct species of honey-bee; these are of small size and mostly stingless. The wild swarms generally establish themselves in the hollow limbs of trees; these are removed to the porches of the houses, and are there suspended by thongs; in this primitive way large amounts of honey and wax are obtained in Central America. The honey is said to be contained in little bags 2 inches long, ranged along the hive in rows, the cells for the young occupying the centre.—The *Humble-Bee* (*bombus terrestris*, Latr.) has been sometimes confounded with the male honey-bee in name, though they do not resemble each other. The humble-bees live in societies less numerous than those of the honey-bee, which end in the autumn to recommence in the spring; they make a loud humming noise during flight, whence the Latin *bombus*, the French *bourdon*, and the English bumble-bee. They live in subterranean habitations, 50 or 60, and sometimes 800 together; the females are the largest, the males the smallest, and the workers intermediate in size. All perish in the winter, with the exception of a few females, which become the founders of a new colony in the spring; these females are 6 times as large as the workers, and may be seen in early spring prying into every hole and crevice in the earth in search of a suitable place for their nest. This they make at a depth of 1 or 2 feet in the meadows and plains; they make cavities of considerable extent, dome-shaped, more wide than high; the vault is made of earth and moss, and the interior is lined with an inferior kind of wax; the entrance may be either a simple aperture at the lower part, or a tortuous moss-covered path; the bottom is carpeted with leaves on which are placed irregular masses of brown wax, the future cells of the young. The larvae live in society until they are about to change into nymphs, when each spins a silken cocoon in which the occupant is placed head downward, and from which it comes out in 4 or 5 days during May and June. The females assist in building the cells, and deposit at the first laying eggs both of males and females; but the latter, on coming to maturity, are only one-sixth of the size of their mother, and lay only the eggs of males. Several females may live in peace under the same roof; impregnation takes place outside the nest. The honey and wax are of the same origin and nature as those of

the honey-bee. As they do not hibernate, but perish during the winter, the same nest is not occupied for 2 successive years.—The nest of the *CARDER-BEE* (*bombus muscorum*, Latr.) is composed of a dome of moss or withered grass placed over a shallow excavation in the ground of about half a foot in diameter; the materials, after being carded by means of the mandibles and fore-legs, are pushed by the first bee backward to a second, which passes it to a third, and so until the nest is reached; they work in long files, the head being turned away from the nest, and toward the material. Their domes are often seen rising 4 or 6 inches above the level of the fields and meadows; the entrance is at the bottom, about a foot long and $\frac{1}{2}$ an inch wide. As in the humble-bees' nest, we find in that of the carder-bee, little of the architectural regularity of the hive of the honey-bee; there are only a few egg-shaped, dark-colored, irregularly disposed cells, arranged generally in a horizontal position, connected by shapeless waxen columns; these cells are not made by the old bees, but by the grubs, who spin them when they are ready to undergo the change into nymphs; from them they are liberated by the gnawing of the old ones; the cocoons are afterward used as store-houses for honey. The true breeding cells are contained in masses of brown wax, the number of eggs varying from 8 to 80, the whole colony seldom exceeding 60; there are 8 sizes, the females being the largest, none of which are exempt from labor; the females, of which several live in one nest, alone survive the winter. The carder-bee is smaller than the honey-bee; but shorter and thicker than the honey-bee; it resembles in color the materials of the nest, having the fore part of the back a dull orange, and the hind part with different shades of grayish yellow rings.—The *LAPIDARY-BEE* (*bombus lapidarius*, Latr.), of a general black color with a reddish orange tail, builds its nest in a heap of stones, of bits of moss, neatly arranged in an oval form; they are social in their habits, and collect honey with great industry; the individuals of a nest are more numerous than the carders, and much more vindictive. The solitary bees display as much foresight, ingenuity, and skill in the construction of their nests, as do the social genera; and perhaps in a more remarkable manner, as a single individual begins and finishes every part of the work. There are only two kinds of individuals, males and females; the males are idle, and the females perform all the labor of making the nest and providing food for the young; they have no brush to their hinder feet and no basket structure on the external side of the tarsi.—Different species of *megachila*, *anthophora*, and *osmia*, have been called by Réaumur *MASON-BEES*, from their constructing their nests with sand, earthy substances, and sometimes wood, stuck together by clay rendered plastic by their saliva; they build in the interstices of brick walls, in crevices in stones, and wherever they can find a

suitable place, often amid the busiest throngs of men. Within a wall of clay, they make from 1 to 6 chambers, each containing a mass of pollen with an egg; the cells are sometimes parallel and perpendicular, at others with various inclinations, and are closed with a paste of earth; they are thimble-shaped, and about an inch long. Many species, not larger than a horse-fly (*andrena*), have been called mining-bees, from their digging in the ground tubular galleries, a little wider than the diameter of their bodies; they are fond of clay-banks, in which their holes, of the size of the stem of a tobacco pipe, are frequently seen; they are 6 or 8 inches deep, smooth, and circular, with a thimble-shaped horizontal chamber, almost at right angles to the entrance, and nearly twice as wide; in this is placed a single grub with its supply of pollen.—There are several British species of solitary bees to which Réaumur has given the name of *CARPENTER-BEES*, from their working in wood as the mason-bees do in earth; they select posts and the wood-work of houses which have become soft from commencing decay. The violet-colored species (*xylocopa violacea*, Linn.) makes her nest by gnawing out small pieces of the wood, which she carries to a short distance and drops for future use, returning by a circuitous route as if to conceal its location; the direction of the tunnel is oblique for about an inch, and then perpendicular, in the axis of the wood, for 12 or 15 inches, and $\frac{1}{2}$ an inch in breadth; sometimes 8 or 4 such excavations are made. The tunnel is divided into cells somewhat less than an inch deep, separated from each other by partitions made of the chips and dust cemented together; some other species employ clay for these partitions. At the bottom of the cell is placed an egg, and over it a paste of pollen and honey; in this way are completed 10 or 12 cells, one above the other, and then the principal entrance is closed by a similar sawdust covering. As several weeks are occupied in these labors, and as she is depositing her eggs at considerable intervals, it is evident that the first egg would have become a perfect insect before the last egg had left the grub state; in order to enable the young to escape as they are hatched, each cell has a lateral opening.—Among the leaf-cutting and upholstering bees, may be mentioned the poppy-bee (*osmia papaveris*, Latr.), a European species, $\frac{1}{2}$ of an inch long, of a black color, with reddish gray hairs on the head and back, and the abdomen gray and silky; she excavates a perpendicular hole in the ground, largest at the bottom, which she lines with the petals of the scarlet poppy cut into oval pieces, and adapted with the greatest nicety and smoothness; the hole is about 8 inches deep, and the lining extends externally on the surface; filling it with pollen and honey to the depth of $\frac{1}{4}$ an inch, she deposits an egg, folds down the scarlet tapestry, and fills above it with earth; it is rare to find more than one cell in an excavation. The rose-leaf cutter

(*megachile centuncularis*, Latr.) makes a cylindrical hole in the hard earth of a beaten path, from 6 to 10 inches deep, in which she constructs several cells about an inch deep, thimble-shaped, and made with circular pieces of leaves neatly cut out and folded together; the rose-leaf is preferred, but almost any leaf with a serrated margin, as the birch and mountain-ash, will be taken; no cement is employed, the elastic property of the leaves keeping them in place; it takes 9 to 12 pieces to make a single cell, which, when completed with its contents of pollen and honey, and single egg, is closed with 8 pieces of leaf exactly circular; the convex extremity of one cell fits into the open end of the next, by this means greatly increasing the strength of the fabric.

BEE-EATER (*merops*, Linn.). The bee-eaters belong to the genus *merops* and family *meropidae*. There are 26 species described, inhabiting most parts of the old world, and migrating from place to place, according to change of season. In the winter they seek the warmest portions of the globe, and the temperate regions in summer, in search of food, which consists exclusively of insects. They commonly perch singly, or in small parties, on a prominent branch, from which they can see all around them. From this they capture insects on the wing, like the swallow, generally returning to the same perch. At morning and evening they often congregate in considerable numbers. Their flight is graceful and sustained; their cry is loud, consisting of pleasant, whistling notes, continued at morning and evening. They rear their young in horizontal holes in the sandy banks of rivers, or in soft rocks which they can excavate. The entrance is small, opening, at the depth of 3 or 4 feet, into a cavity in which the parent can easily turn. The eggs are from 5 to 7 in number, laid on the bare ground, or on moss or other soft material. The common bee-eater (*merops apiaster*, Linn.) inhabits the south of Europe, especially about the Russian rivers Don and Volga, and the northern parts of Africa. It is occasionally seen in England and Sweden. The other species of the genus are found in Africa, Asia, and the Indian archipelago. The common species is about 10 inches long; the bill, $1\frac{1}{4}$ inch, black and pointed; eyes, red; forehead, bluish green, and behind it green; top of the head, chestnut, with a green tinge; hind head and upper part of neck, chestnut, paler toward the back; from the bill is a black stripe, passing through the eye; the back and scapulars, pale yellow, tinged with chestnut and green; rump and upper tail coverts, blue-green, with a yellowish tinge; throat, yellow; under parts, blue-green, palest on the belly; lesser wing coverts, dull green; quills, mostly sea-green without, and many of the inner rufous—the first very short, the second the largest of all; the tail, wedge-shaped, of 12 feathers, the shafts brown above and whitish beneath—the 2 middle ones sea-green, shaded with rufous—and the longest by nearly an inch; claws,

black. In Egypt this species is eaten as food. The eggs are white. It receives its name from the insect which is its favorite food, though it feeds on most of the winged insects, which it takes as it flies.

BEE-KEEPING. The selection of a suitable place for an apiary is of great importance. The situation should be well sheltered from strong winds, either naturally or by building walls or fences. If not sufficiently protected, the bees are prevented from leaving the hive, and when returning with heavy loads of honey and pollen are blown to the ground, or dashed against trees and rocks, and thus many are lost. It is not well to have large surfaces of water very near, lest the bees, overcome by cold or fatigue, should be forced to alight on them, or be carried down by the winds and perish. The hives should especially be protected from north-west winds and from chilling south winds. It is necessary where the winters are severe particularly to regard protection from cold. The hives may face the south or east, or south-east, and thus the greatest benefit will be derived from the continuance of the heat and light of the sun during that portion of the day when they are most useful. The hives should be placed in a right line; it is better to place them on shelves, one above another, than in near rows upon the ground. The distance between the hives should not be less than 2 feet; their height from the ground should be about the same. Some experienced bee-keepers, however, raise the platform of the hive not more than 2 inches from the earth, considering this preferable, because fewer of the fatigued or chilled bees that miss the hive in returning and alight under it, are lost, the flight of issuing swarms is lower, and there is less exposure to strong winds. It will be found of not a little consequence to have the apiary where it can be conveniently watched in swarming time, but it should by all means be removed from all annoyance and disturbance by men or teams passing and repassing, or animals laboring or grazing too near the hives. Grounds on which there are no large trees, but some of small size and shrubbery, on which the swarms may alight, are preferable. The grass should be mowed frequently around the hives, and the ground kept clean, not only for the delight of the bees, but to prevent too much dampness, and to destroy the lurking places of noxious insects and vermin.—The proper construction of the hive is one of the things most essential to success in bee-keeping. Many different kinds have been invented, each more or less complex, designed to gain certain advantages, and to obviate certain evils in managing bees and producing honey. Of these it will be sufficient to mention several of the most important varieties. The chamber hive is made with two apartments—the lower for the residence of the bees, the upper to hold the boxes in which the bees put their honey after having filled the lower part. The advantages of this are claimed to be, a per-

manent cover for the boxes of glass or wood, or vessels of any kind put on the hive; a better protection from the weather, with less inconvenience in turning up the hive and in fitting a shelter over it, than is found with a movable cover. These hives are sometimes made wedge-shaped, being several inches narrower from front to rear at the bottom than at the top, to prevent the comb from slipping down. They are also sometimes furnished with inclined bottom-boards to roll out the worms that fall upon them, or are driven down by the bees. These modifications are, however, not generally found of much importance. To protect the bees from vermin, several kinds of suspended hives have been contrived with inclined movable bottom-boards.—The dividing hives are made with several compartments, the object being to multiply, at the will of the bee-keeper, the number of colonies without the trouble and risk of swarming and hiving. When bees from any cause lose their queen, and the combs contain eggs or very young larvæ, another queen will be developed. By means of these hives, the partitions of which are supposed to divide the brood-combs, a part of the bees and of the combs are removed and placed by themselves to go on making honey, and multiplying in every respect like a natural swarm. A very large number of stocks or swarms may be thus made by a bee-keeper sufficiently experienced. The objections sometimes made against this kind of hives are: the expense of construction, the frequency with which bees are found to put all the brood-combs in one compartment, the difficulty of removing a part at just the time for the development of a new queen, and the increased exposure to cold and starvation in winter by separating the bees in the different compartments.—Several inventions have been made to enable the bee-keeper to change the combs and get the honey without driving out or destroying the bees. Changeable hives are made in sections, generally three drawers placed one above another, holes being made to allow the bees to pass. When the boxes are all filled, and it is desired to change the combs, the upper box is removed, and its place supplied by a new one put in at the bottom. This being done yearly, the entire contents of the hive would be changed every three years, and be kept new. It is held that there is a necessity for changing the brood-combs, because the larvæ hatched from the eggs and sealed up in the cells, there spin their cocoons, which remain, when they go out, upon the walls of the cells. This deposit, although extremely thin, diminishes the size of the cell, affording less room for each succeeding generation, thus causing the bees to gradually deteriorate in size. The additional advantages claimed for this kind of hive are: the facility with which small swarms may be united and large ones divided; the opportunity it offers for feeding, by putting into the hive a box of surplus honey; and the uniformity of temperature preserved by the air chamber between the

drawers and the outside of the hive. But on the other hand, the cost is considerable, and it is denied that deterioration is caused in the bees by the filling up of the brood-cells, and time and honey are therefore needlessly wasted by keeping the bees constantly making new brood-comb; this, and the difficulty of putting the swarms into the hives, and the many lurking places they afford to the bee moth, and also the difficulty of procuring, in this method of taking away honey, that which is good and free from cocoons and bee bread, more than counterbalance, in the opinion of many bee-keepers, their advantages.—Swarming-hives are sometimes used. They are made with sections, so that by closing all or a part of them, the space which the bees occupy is lessened, and they are crowded out, and their swarming hastened. Hives are sometimes arranged so as to allow the bees to go on accumulating honey and increasing in number, and not swarm at all. A hive of bees is put in a bee-house, and empty hives connected with it, so that as soon as one becomes filled the bees pass to the adjoining ones. In some instances great quantities of honey have been obtained by this method; but it has not generally been found practicable or profitable.—The result of all the experiments made in this country, with complicated and ingeniously contrived hives, and also in Europe where equally many attempts have been made to adapt artificial tenements to the simple instincts of the bee, tends to show the superiority, for practical purposes, of the simpler hives. For protection against the extremes of heat and cold in summer and winter, straw hives are excellent. In Poland, where finer honey is produced, and bees more successfully managed than elsewhere in Europe, hives are made by excavating trunks of trees, taking logs a foot or more in diameter and about 9 feet long. They are scooped out or bored for the length of 6 feet from one end, forming hollow cylinders, the diameter of the bore being 6 or 8 inches. A longitudinal slit is made in the cylinder nearly its whole length, and about 4 inches wide. Into this is fitted a slip of wood with notches on the edges large enough to admit a single bee. This slip is fastened in with wedges or hinges; if it is in several parts, it will often be found more convenient. The top is covered, and the trunk set upright with the opening toward the south. Through this door the condition of the entire swarm is seen, and the honey taken from time to time. The length of this hive and its small diameter fit it for both large and small swarms.—One of the best kind of hives is made of pine boards, an inch or an inch and a quarter thick. The best size is 12 inches square inside, and 14 deep. If to be exposed to the sun and rain, they would be better painted. The top is made of boards 15 inches square. The boards should be joined carefully; many put paint between the junctions to keep the moths from breeding in them. It saves the bees much labor if the inside of the hive is planed and

cleaned, and covered with a thin coating of melted beeswax. It should not be washed immediately before a swarm is put in, with water or spirits, or any liquid that will prevent the comb from adhering readily. Cross sticks should be put in to support the comb. Small notches should be made in the bottom of the hive for the passage of the bees. Boxes for caps or covers may be made, if the chamber-hive is not preferred, about 7 inches deep and 12 or 18 square. If glass vessels or others are to be used to receive the box honey, they may be put under these caps, or the caps may be used alone. They should fit close to the tops of the hives, several holes being made in the tops for the passage of the bees. The bottom board should be 15 inches square, at least large enough to give the bees space to alight and expatiate. It is better to give each hive a separate stand. If protection from vermin and insects is required, the hive may be placed on a single pedestal 2 feet from the ground; but if there is no danger from them nor from dampness nor snow, they may be nearer the ground. The hives need some cover from the sun and rain. A separate one for each may be easily made by putting together 2 boards, 1½ or 2 feet long, and of the necessary width, letting them incline to each other so as to form a roof. Bee houses are found not absolutely necessary, and worse than useless when not rightly constructed. It is necessary to guard against shading the hives too much in spring and fall, against preventing a free circulation of air all around them in summer, and exposing them too much in the middle of the day to the sun. The bee house should not, in cool weather, make the temperature around the hives much higher than the bees will encounter at a distance. The simple movable covers just mentioned, which are easily adjusted as the season demands, with hives made of boards of sufficient thickness, well painted to prevent warping and cracking, will generally prove an ample protection, except in winter.—The new swarms generally appear during the months of June and July, but sometimes as early as May, or as late as August. The swarms are usually hived, when the branch, or whatever they alight on, can be removed, by shaking them off in front of the hive, a little raised on one side to allow their passage. When they collect where they cannot be shaken off, and the hive cannot be placed near, they may be brushed quickly into a gauze sack or any vessel in which they can be kept and carried to the hive. It is generally irritating to the bees, and unnecessary if not useless, to endeavor to make the swarms collect by a din of horns, tin pans, and bells. They will sometimes collect on a pole with a few branches, some broom corn, or dry mullein tops or similar things fastened to the end, and held in the air. They may sometimes be arrested when going off by throwing water or earth among them. Various means are used on such occasions to disconcert them, and with

about equal success. It is very seldom that a swarm starts for its chosen destination without previously alighting. If 2 or more swarms issue at the same time and unite, they may be separated, if desired, by shaking them from the branch between 2 or more hives placed near together. Should the queens enter the same hive, the bees must be shaken out between empty hives as before, and this operation repeated till the queens separate, or the bee-keeper is able to catch one or more of them, and put them with the bees where wanted. Or if there are only 2 swarms united, a part may be separated and returned to the parent hives, and the rest put in one hive; or they may all be put in one, and boxes put on immediately. It is sometimes desirable to unite small swarms; this may be easily done if they issue about the same time, by inverting one hive and placing the other over it; the bees in the lower will ascend. When for any reasons it is wished to defer for a short time the issuing of a swarm which the signs indicate to be just at hand, the bees on the outside of the hive should be sprinkled with water. This is effectual, but only before the swarm has started. Sometimes the swarm issues and returns several times; if this is owing to the inability of the queen to fly, she should be found, if possible, and put with the others in the new hive. If the weather should be such as to prevent the new swarms from going out to collect honey, several days immediately after being hived, it may be necessary to feed them.—Many bee-keepers have discarded the practice of killing bees to get the honey; the surplus after enough has been stored in the hive for winter, being taken away by means of boxes, or, if they are not used, out from the hives, the bees being stupefied by sulphur or tobacco smoke. The comb is to be cut off clean so that the honey may run as little as possible upon the bees. The boxes should be put on a little before the hive is full. Polish apiarians cut out the old comb annually to lessen the tendency to swarming, and thus obtain the largest amount of honey. The old practice of destroying the bees, except those intended for wintering, after the hives are filled and the honey season has passed, still prevails extensively. La Grenée gives many reasons proving this the most profitable. The time for taking up hives depends somewhat on the season and the bee-pasturage. The quantity of honey does not increase generally after Sept. 1. To suffocate the bees, the hive is put over an inverted hive, or over a hole in the earth in which some rags smeared with sulphur are being burned. The bees fall in a short time and are buried to prevent resuscitation, and the honey removed. The bees are sometimes deprived of the entire store of comb and honey in the early part of the season, generally after the leaving of the first swarm, and driven into a new hive. When the old hive is infested with moths, or the comb is not good, and it is desirable to winter the

bees, this operation may be expedient. The effect on the bees is not generally good. It is performed by inverting the hive, and putting the other into which the bees are to be driven over it, making the junction close, and tapping with the hand or a stick the sides of the hive; the bees will pass up to the new hive, which is to be then removed to the stand.—Hives are sometimes attacked and robbed, either because they are too weak or other bees are attracted by broken honeycomb or by food put near the hive. To protect it after the robbery has commenced, the hive should be removed to the cellar, or some cool dark place, and allowed to remain 2 or 3 days. It is sometimes sufficient to close the entrance to the hive so as to admit but one bee at a time. It is beneficial to put a similar hive in the place of the one removed, and rub on the bottom board wormwood leaves or the oil of wormwood. This is so disagreeable to the bees that they speedily forsake the place. Breaking the comb in the hive of the robbers will generally make them desist.—The quantity of honey usually necessary for wintering safely a swarm of bees is 80 pounds. Those that are found in the autumn to be weak in numbers and with a scanty supply of honey should be taken up. Only the strong swarms are profitable to winter. Brown sugar made into candy by being dissolved in water, clarified and boiled to evaporate the water, is the best food for bees. The sirup should be boiled till it begins to be brittle when cooled. This or common sugar-candy may be fed to bees in the hives, under them, or in the boxes. If fed in the liquid state, it may be introduced into the hives in dishes, some contrivance being made to enable the bees to eat it without getting into it. It may sometimes be necessary to commence feeding in the autumn. It is not generally best to begin unless it is to be continued till flowers become abundant. Honey is of course the best food, yet sometimes too expensive; if candied, it is to be heated till dissolved. Feeding should never be attempted as a matter of profit. The best honey cannot be made from cheap honey and refuse sugar and molasses; it is not made by the bees but by the flowers. Of these clover is the principal source of supply. Fruit-trees, basswood, locust, and maple yield abundantly and of fine quality, buckwheat furnishes a large quantity, excellent for the winter food of bees, but inferior for the table.—The bee moth is the greatest foe the apiarian has to contend with. Many inventions have been tried without success, to protect the bees from this pest. The best safeguard is to have the hive close and well jointed, and well covered with paint, the entrances not too large, and the bees vigorous and numerous, and to examine the hive daily from about May 1, till September or October. Constant watching is indispensable. In the daytime the moths remain in their hiding-places, and may often be found around the hive. They are on the wing in the evening, hovering around the

apiary or running over the hives, endeavoring to enter and deposit their eggs. Many may be destroyed by entrapping them in shallow dishes of sweetened water with a little vinegar added. Hollow sticks, small shells, and similar things are often placed on the bottom board, where the worms hatched from the eggs may take refuge and be destroyed. It is necessary to look often under the bottom of the hive, and if one side is raised (as is required for ventilation in warm weather), under the blocks or shells on which it rests. These caterpillars at first are not thicker than a thread, are of a yellowish-white color with a few brownish dots. They live in the wax, eating it, and filling the comb with webs. They protect themselves from the bees by a sort of silken sack, which they spin, and in which they lodge. When they have attained their full size, which requires about 8 weeks, they spin their cocoons; in these they remain enclosed some time, and change to chrysalids of a light brown color, with a dark elevated line along the back. A few days afterward they are transformed to winged moths and issue from the cocoons, and are soon ready to deposit eggs for another generation. Rats and mice do not attack the hives except in winter, unless the comb is unprotected by bees.—Spiders sometimes spin their webs upon and around the hives, which entangle and annoy the bees. They are easily removed. There is a disease called "foul brood," which sometimes is very destructive to the young bees in the larva state. They die in the cells, and become black and putrid. The disease appears to be in a measure infectious. The only remedy is to drive out the bees into a new clean hive. It is the practice, in some parts of Germany, to put the bees in a temporary hive, and let them remain 24 hours, without food, in the dark, before settling them in the new hive. It is attributed sometimes to feeding the bees with foreign honey; the infection being conveyed by the honey, which, to be safely fed, should be previously scalded.—Many different methods are practised in wintering bees. It is necessary to protect them especially from 2 things: from being frozen, and from being starved. The latter happens when they collect together closely, in the coldest weather, and the comb becomes covered with frost and ice, the moisture from their bodies and from the air being there deposited and frozen, excluding them from the honey. The entrance to the hive is liable to be stopped with ice, and the bees thus suffocated. The bee never passes into the torpid state in winter, like some other insects; it perishes at a degree of cold low enough to freeze it. As in the case of other kinds of farm stock, it requires less food when kept warm and comfortable. If the hives are to be carried into a house or cellar, the place for them should be cool, dry, and dark. The best method is to house them, unless sufficient protection can be given them on the stands. The Russian and Polish bee-keep-

ers, who manage bees as extensively and successfully as any, winter their hives on the stands; but they make their hives of inch and a half plank, and wind the upper part with twisted ropes of straw or cordage to increase the protection against extremes of heat and cold. If left on the stands, hives made of common boards need additional covering; the entrance should also be narrowed so as to leave only space enough for a single bee to pass. This must not be allowed to become stopped with frost and ice, or dead bees and filth. Light snow may cover the hive without danger. The practice of bee-keepers is about equally divided between these 2 modes of wintering. The success of out-door wintering would be greatly increased by making better hives, by better protecting them from extreme cold, and from changes of temperature. It is easier and preferable, when the number of hives is very large, and there is no danger of theft, to manage them out-doors than in-doors. With a small number it may be otherwise.—The time for carrying bees out from their winter quarters is in March, except in very backward seasons. A few bright cold days will not be more destructive to them than too long confinement. If new snow has fallen, and the weather is not sufficiently warm for them to venture into the air safely, the hive may be shaded from the sun, or the bees confined in the hive. If they are to stand very near each other, it is not well to carry out too many hives at once, the bees at first not readily distinguishing their own. The hives should be raised from the bottom board only on one side, if at all. Many prefer, if the bees are not especially numerous, to let the hive rest entirely on the board, allowing less room for passage, and securing greater defence against intruders. More ventilation than this affords may be required in warm weather, when, if liable to suffer from heat, the hive may be raised entirely, proper means being furnished for the bees to ascend from the bottom board.—The careful bee-keeper has long desired to possess some method of measuring the daily increase or decrease in the weight of his hive. A recent German publication states that a German bee-keeper took the trouble to weigh one of his hives twice a day—before the bees left in the morning and after their return at night—and thus he determined the nightly loss by consumption and evaporation. These observations were continued from May 5 to August 2, a period of 91 days, and the results are very interesting. On May 5 the hive weighed 64 pounds; it lost two swarms weighing 12 pounds, yet on Aug. 2 it weighed 120½ pounds. There was no increase in weight from June 23 to July 21, except of ¼ pound on 1 day and ¼ on another, and from July 17 to Aug. 2 the whole increase was only 8 pounds. The work of each day is minutely recorded, and the results go to prove that the bee-keeper should have some means of ascertaining the weight of his hives daily throughout the season. A

method of doing this has been invented by Mr. Shirley Hibbard, of Tottenham, England. It consists of a turned pillar, made after the fashion of a telescope, working like a piston in a brass or iron cylinder. Beneath the pillar is a spiral spring on which the pillar rests. Two slots run down the side or front of the cylinder, and between them an index is marked. A finger is attached to the base of the pillar, and the hive adjusted on the top of the latter, so that as it presses down on the spring the finger marks the gross weight of the whole. A thumb-screw passes through the cylinder, and by pressing against the pillar holds it in a fixed position whenever it may be desirable.—Bee-keeping has, in some instances, been made very profitable. It is, however, uncertain. Much depends on the season and on the pasturage. The value of the best honey is, in a great degree, determined by the style and state in which it is marketed. It will generally be found most advantageous to use glass vessels or boxes, and to send the honey to market in the same.

BEECH (Saxon, *boe*, from Lat. *fagus*, Gr. *φῦκος*, verb *φαγεῖν*, to eat, the nut of the tree being eatable), a genus of Endlicher's order *cupulifera*, Lindley's *corylaceæ*, Jussieu's *quercinææ*, and of Linn. class *monocia polyandria*. The order is most nearly allied to the *betulaceæ*, or birches, and contains the genera of the oak, hazel, horn-beam, chestnut; is distinguished from all other plants by an apetalous superior rudimentary calyx, the fruit in a cup, a one-celled nut with one or two seeds, the others being abortive. The generic characters of the *fagus* are: sterile (male) flowers—ament globular, pendulous on silky thread; perianth 6-cleft, bell-shaped; 5 to 12 stamens. Fertile (female) flowers—2 within a 4-lobed prickly involucre; perianth 4 to 5-lobed; ovary 3-celled (2 abortive); styles, 3; nut one-seeded. Some branches bear male, others female flowers. The number of species is very limited, some being considered as mere varieties. In the temperate regions of the northern hemisphere, on both continents, there are extensive forests consisting of beeches; which also occur mixed with oaks, pines, firs, &c. The following are the most remarkable species: *F. sylvatica*, or common white beech: leaves ovate, acuminate, slightly toothed, ciliate on the margin, acute at base; nut ovate, 3-sided, obtuse, pointed; European; of this the American is taken to be a variety, growing in Florida and other southern states. *F. ferruginea*, or red beech: leaves oblong-ovate, acuminate, pubescent beneath, coarsely toothed, obtuse, and unequally subcordate at base; nut acutely 3-sided, muricate; most frequent in the northern United States. *F. obliqua* and *Dombyi*, both having valuable wood and a beautiful crown; *F. procera*, scarcely less towering in height than the araucaria; *F. pumilio*, a dwarf species growing above the region of trees, on lofty mountains—are all natives of the Andes of southern Chili. Some species grow in the Magellanic regions; others in Van Diemen's Land and the

colder parts of New Zealand. The varieties of the European *F. sylvatica* are: *F. purpurea*, whose bright blood-colored leaves, when tossed by the wind in sunshine, seem to be flames; *F. cuprea*, with copper-colored shining leaves; *F. asplenifolia*, with some leaves entire, and others cut into narrow strips; *F. pendula*, or weeping beech, with branches drooping to the ground; *F. cristata*, with ragged crest-like leaves; *F. variegata*, with leaves spotted with white; *F. latifolia*, with chestnut-like leaves, &c. All these are ornamental trees.—The beech is easily propagable by seed; also by grafting, budding, and in-arching. It thrives in a deep moist soil (on the Ohio some attain 100 feet in height), but also succeeds well in rocky soil, in heaps of stones under cliffs, even in shaded situations. When crowded by its kindred, or by other trees, its stem rises pillar-like even to 80 feet in undiminished thickness, before branching into a tufty crown, reminding one of Gothic halls. Standing alone, it sends forth branches at from 10 to 80 feet above the root, at a large angle, far and wide, the lower ones almost horizontal, while the upper rise to form a majestic crown. In depth of shade it is scarcely equalled by any other tree. Its light grayish, or leaden-greenish, smooth, shining bark, its rich green, shining foliage, which appears earlier than that of the oak, from long buds in tender drooping jets, and which is tinted yellow, reddish, and brown in the autumn, remaining often through the winter on the tree, recommend it for avenues, plantations, and clumps. Of these there are many in Normandy and other parts of Europe, which abound in beech forests. The diameter of the common beech seldom surpasses 3 feet. The tree scarcely bears fruit before the 50th year of its age, and then not every year. After the 140th year, the wood-rings become thinner. The tree lives for about 250 years. Some stems are fluted, some even twisted. The roots stretch far away, near to the surface of the soil, partly above it. Young beeches are useful for live hedges, as they bear pruning, and as their branches coalesce by being tied together, or by rubbing each other. Amputations of limbs, and deep incisions in the tree, soon become obliterated by the bark, which contains a peculiar periderma. The wood is yellowish-white in the common beech, brownish in the red; very hard, permeated by transverse lighter-colored pith-rays and shorter rays, so that the longitudinal fibres are somewhat waving. Its close wood-cells, with thick walls, afford a great quantity of heating material, and of potash, so that the wood ranks next to hickory, oak, and maple, as fuel. It is easily decayed by alternation of dryness and moisture, and is unfit for many purposes; but it is good for cylinders for polishing glass, for plane stocks, chair posts, shoe lasts, tool handles, wheel felloes, cart bodies, rollers, screws, bowls, even for ship-building, where no better timber can be obtained. It is incorruptible when constantly under water. The tree is so rarely struck by

lightning, that woodmen and Indians consider themselves safe when under its shelter. Very good oil may be pressed from the beech nut, almost equalling that of olives, and lasting longer than any other after proper purification. Wild animals feed on the nut, swine are fattened on it, and people eat it in Europe; too freely eaten, it produces giddiness and nausea. The husks of the nut contain *fagine*, a peculiar narcotic extractive principle.

BEECHER, LYMAN, D. D., an American clergyman, born at New Haven, Conn., Oct. 12, 1775, graduated at Yale college in 1797, and studied theology under the direction of President Dwight. In Dec. 1798, he was ordained pastor of a church at East Hampton, L. I., upon a salary of \$300 per annum. In 1810 he removed to the care of the first church, at Litchfield, Conn. Here he remained about 16 years, during which time his remarkable qualities as a preacher and as a zealous and active minister, brought him a great reputation and a remarkable influence throughout New England. He was much consulted, and was forward in most of the religious undertakings of the time, such as the Connecticut missionary society, the Connecticut education society, the American Bible society, and the like. In 1826 great defections had taken place in the churches in Boston and the neighboring parts of New England into Unitarianism, following the lead of Dr. Channing and others in sympathy with him, and Dr. Beecher was chosen, out of all the clergy of New England, to uphold the standard of the ancient Puritan faith against their desertion. He was installed over the newly established Hanover street church, Boston, and, during his residence there, devoted himself with both zeal and ability to the urgent work committed to his guidance. His ministry necessarily partook largely of a controversial character. He flung himself into the thickest of the battle, and was sustained by the confidence and fervent admiration of the religious body to which he belonged. The sincerity and spirituality of his preaching was generally acknowledged, and it was attended by decisive results, in a revival of the spirit and increase in the numbers of evangelical Christians, so as still to preserve to them the numerical superiority in that part of the country, at one time thought to be seriously in danger. In this work Dr. Beecher was looked up to as the most efficient champion and defender of the faith. But he was not of a mind to rest while any thing remained to be done. The vital importance of communicating sound religious influences to the population of the great Mississippi valley became the paramount interest in the minds of many reflecting as well as philanthropic people, for the highest social and political as well as religious considerations were concerned. Among many similar institutions founded for this purpose, the Lane theological seminary was established at Cincinnati, and Dr. Beecher was invited to take the direction in 1832. He carried the same strength

and ardor into his new connections, and electrified a considerable part of the country by the publication, soon after his arrival, of a tract sounding the alarm of Roman Catholic supremacy at the West. The transplanting of a mind of such vigor into that impressible society could not be of slight effect. His great character, uniform principles, and fixed adherence to truth and his convictions, together with his boldness and fervent eloquence, worthily filled a large sphere of duty and produced a serviceable impression upon western society. He remained in Cincinnati about 10 years, having, in addition to the care of the seminary, the pastoral charge of the second Presbyterian church. Since leaving there he has resided mostly in Boston, without fixed employment, but with undiminished intelligence and vigor even at a very advanced age. During the more active portion of his life few or none of his profession were better known to the people of the United States, and it is probable that the labors of no other have produced a more immediate and apparent effect. His fame as an orator was naturally the most prominent, and as such he possessed remarkable powers. His style was that of a man thoroughly in earnest, whose life was devoted to the inculcation of great truths, and whose convictions were of a heat to melt all obstacles. Original turns of thought and expression, and flashes of pictorial illustration, were frequent in his oratory, and gave him an electrical influence over his audience. His position as a theologian will be judged with that of the body for which it may properly be said he combated, but it was sustained by sterling qualities which were universally recognized. In almost all the conspicuous moral enterprises of his time he has borne a prominent part, and in particular his connection may be mentioned with the temperance movement, which for 80 years has elicited and absorbed so much of the moral life of this country. Early in its course he printed a famous series of sermons on intemperance, which attracted much attention to the cause. His numerous publications have been mostly occasional and miscellaneous, and hardly of a kind to perpetuate his influence. Dr. Beecher has been 8 times married, and has been the father of 18 children, of whom several have attained to eminence as writers and ministers.—**CATHERINE ESTHER**, eldest daughter of the preceding, born at East Hampton, L. I., Sept. 6, 1800, where she resided till she was about 10 years of age. She received her early education at Litchfield, and soon after leaving school, experienced a great calamity, to which she alludes in her writings as the crisis of her life. This was the death of Prof. Fisher, of Yale college, to whom she was betrothed, and who lost his life by shipwreck on the coast of Ireland. This event threw a deep cloud over her mind, from which she slowly emerged to find consolation in a life of activity. In 1822, she opened a female seminary at Hartford, Conn., where she continued the work of instruction for the next 10 years,

during which time she made her appearance as the author of a manual of arithmetic, and of elementary books of instruction in theology and mental and moral philosophy. She accompanied her father, in 1832, to Cincinnati, where, for 2 years, she was at the head of an institution for female instruction. Obligated to resign by failing health, she conceived and undertook the development of a plan for female Christian education, to be promoted through a national board, with high schools and normal schools to provide a sufficient supply of well-instructed teachers. This has been made the guiding purpose of her life, for which she has written, travelled, and exerted all the influence of her active mind, in all parts of the country, for many years. The incidents of this grand scheme have frequently led her before the public in essays in authorship. Among these are "Domestic Service," "The Duty of American Women to their Country," "Housekeeper's Receipt Book," "The True Remedy for the Wrongs of Woman," "Treatise on Domestic Economy." She has recently published a work on physiology and the condition and habits of American women, and the first volume of a course on theology and moral philosophy, in which she makes some striking departures from the Calvinistic theology.—**EDWARD**, eldest son of the Rev. Lyman Beecher, born 1804, graduated at Yale college 1823, studied divinity at Andover and New Haven, tutor in Yale college 1825, pastor of Park st. church in Boston, 1826-'31, president of Illinois college at Jacksonville 1831-'44, pastor of Salem st. church in Boston 1846-1856, and is now pastor of a church in Galesburg, Ill. He has published "Conflict of Ages," "Papal Conspiracy," and a work on Baptism.—**HENRY WARD**, minister of Plymouth church, Brooklyn, N. Y., son of the Rev. Lyman Beecher, born in Litchfield, Conn., June 24, 1818, graduated at Amherst college, Mass., in 1834, and studied theology under his father, at the Lane seminary, Cincinnati. He was first settled, in 1837, as Presbyterian minister at Lawrenceburg, Indiana. After a residence of 2 years, he removed to Indianapolis. He remained there till 1847, when he accepted an invitation to become pastor of the Plymouth church, in Brooklyn, N. Y., an organization of orthodox Congregational believers, an office which he still continues to occupy. Beside occasional addresses, he is the author of a volume of "Lectures to Young Men," and editor of the "Plymouth Collection of Hymns." He was also one of the founders of the "Independent," a weekly religious newspaper of New York, to which he has been a constant contributor, his articles being signed with an asterisk. A volume of these articles has been collected under the name of the "Star Papers." As a popular lecturer, he has appeared very generally before the lyceums of the country. As a preacher, he is said to have the largest uniform congregation in the United States. Discarding many of the usual formalities of his profession, he addresses himself with vigor to the hearts and under-

standings of his hearers, and with all the more effect on account of the greater range of topics, as well as of style and illustration, which he has introduced. Born an orator, the smiles and tears of an audience are at his command, and in his sermons, no less than in his lectures, they are both aroused. As a moralist and politician he is opposed to the institution of slavery, and, in the presidential contest of 1856, he took an active part in favor of the republicans, not only with his pen, but by addressing mass meetings in various parts of the northern states.

BEECHHEY, FREDERIO WILLIAM, British admiral, arctic navigator, born in London in Feb. 1796, died there Nov. 29, 1856, eldest son of the late Sir William Beechey, portrait painter. He entered the British navy as a volunteer, at the age of 10, and saw a great deal of service (including the contest at New Orleans) during the 12 years following. In 1815 he was made lieutenant; in 1818 he sailed in the *Trent*, under Franklin, on his first voyage of arctic discovery, acting as artist to the expedition. In 1819 he went as lieutenant in the *Hecla*, under Sir Edward Parry, in his first arctic voyage. In 1821 he was commissioned (with his brother, H. W. Beechey) to make a survey of the north coast of Africa, from Tripoli to Derne. He was raised to the rank of commander, and sent out, in 1825, in the *Blossom*, on another arctic expedition, *via* Cape Horn, to act in concert with Franklin and Parry, and, having passed Behring's straits, reached, in Aug. 1826, a point north of Icy cape, reaching in boats $71^{\circ} 23' 81''$ N. lat., and $156^{\circ} 21' 30''$ W. long.—only 146 miles from the extreme point simultaneously reached by Franklin. As they were not aware of each other's position, neither advanced. Commander Beechey subsequently discovered, in 1827 (in which year he was made post-captain), 2 secure harbors, south-east of Cape Prince of Wales, and near to Behring's straits, which he named Port Clarence and Grantley Harbor. He returned to England, after an absence of nearly 3 years. Between 1829 and 1839, he was employed in making surveys of the coasts of South America and Ireland. In 1854 he was appointed rear admiral of the blue. In 1828 he married a daughter of Col. Stapleton.

BEECHHEY, SIR WILLIAM, English portrait painter, born at Burford, Oxfordshire, Dec. 1753, died at Hampstead, near London, Jan. 1839. He was articled, first to a conveyancer in the country, and then to a London attorney, but procured his release, at the age of 19, and became a student of the royal academy, and closely imitated the style of Sir Joshua Reynolds. For some time he confined himself to portraits at Norwich, but having executed some small pieces in the manner of Hogarth, which were very successful, he returned to London, where he obtained numerous commissions for full-length portraits. In 1793 he was elected associate of the royal academy, and appointed portrait painter to Queen Charlotte. In 1797,

having painted a good picture of George III., he was knighted.

BEEFEATERS, the yeomen of the queen of England's guard. They are now merely remnants of the ancient pomp of feudal royalty, and only act as warders at the Tower, and as attendants on the queen's state coach on occasions of high ceremonial, such as coronations, the opening and prorogation of Parliament, and similar processions. At state royal dinners, they are on duty at the side-board, as their name (corrupted from *buffetiers*) implies, recalling probably the time when kings were not so sure of the loyalty of their guests, but that the presence of an armed life-guardaman at the buffet was an agreeable addition to their sense of security. Readers of romance will remember the fine scene in Quentin Durward, where Louis XI. conceals an archer of his guard, with loaded arquebuse and lighted match, behind such a piece of furniture, during a solemn banquet given to the envoy of Burgundy. The beefeaters are now only 100 in number, but are interesting from the fact that they wear the exact dresses, flat black velvet berrets, and slashed doublets of black, blue, scarlet and gold, with gilded partisans for weapons, which they wore in the reigns of Henry VIII. and Elizabeth; so that, on a visit to the Tower, they add much to the effect of the scene.

BEELZEBUB, a compound of Baal, though concerning the terminal part of the word there has been much difference of opinion. Some writers translate the term "god of flies," and assign two reasons for it, either or both of which may be true or false, viz.: that he protected the people against noxious insects, or that he was so called in derision by the Israelites when they wished to speak disrespectfully of the religion of their Moabitish neighbors. Others translate the term still more disrespectfully, "god of ordure," while others still, changing the word to Beelzebath, render it "god of hosts," or Beelzebul, "god of heaven." It appears very certain that he was regarded in New Testament times as an evil demon, for Jesus was accused of casting out devils by "Beelzebub, the prince of devils," and he is perhaps the same deity elsewhere styled the prince of the power of the air. Such deities were common in the worship of the ancients, being but a modified form of the oriental dualism, which recognized a good deity and an evil one.

BEEMSTER, one of the *polders* or tracts of drained land of the Netherlands, area 8,000 acres, containing a neat village. The inhabitants are chiefly employed in raising sheep and cattle.

BEER (Germ. *bier*), a fermented liquor made from malted grain—in Europe most commonly from barley, but in this country from wheat as well, and in India from rice. Corn, oats, peas, and other similar articles of food, may be used also for this manufacture. Hops, and other bitter flavoring matters, are added to improve the taste, and impart their peculiar properties to the liquor. The name beer is also given in this country and in Britain to several

partially fermented extracts of the roots and other parts of plants, as spruce, sassafras, ginger, &c.; most of which are designated by the term root-beers. But as generally used in Europe it is applicable only to liquors prepared by malting, and seasoned with hops or other bitters. The drink in some of its varieties appears to be of great antiquity, and was probably discovered by the Egyptians. Tacitus notices it as being in common use with the Germans of his time. Pliny describes the *celia* and *ceria*, the beer of the Spaniards, and the *cerevisia* of the Gauls, made from almost every species of grain, and evidently named from Ceres, the goddess of corn. Aristotle speaks of its intoxicating qualities, and Theophrastus very properly calls it the wine of barley. Herodotus (450 years B. C.) stated that the Egyptians made their wine of barley. An ancient description by Isidorus and Orosius of the process in use by the Britons and Celtic nations defines the liquor as not differing essentially from that now made. "The grain is steeped in water and made to germinate, by which its spirits are excited and set at liberty; it is then dried and ground, after which it is infused in a certain quantity of water; which, being fermented, becomes a pleasant, warming, strengthening, and intoxicating liquor." Beer is a nourishing drink from the gum, sugar, and starch it holds in solution; and the bitter substances combined with it impart their tonic properties. The proportion of alcohol is small. In the Edinburgh ale it has been found by Mr. Brande to amount to 6.20 per cent.; in brown stout, to 6.80; Burton ale, 8.88; London porter, 4.20; small beer, 1.28. Burton, or the pale India ale, as found by Hoffman, contains in 100 parts: water, 78.87; extract of malt, 14.97; absolute alcohol, 6.62; and carbonic acid, 0.04. Pale ale consists of the same ingredients, in the following proportions: water, 89.74; extract of malt, 4.62; alcohol, 5.57; carbonic acid, 0.07. Lactic acid, aromatic matters, and various salts, are detected in the extract. If, by continued fermentation, the sugar is all converted into alcohol, the acetous fermentation is likely to ensue, and the beer then passes into vinegar. For the present process of manufacture, see BREWING.—Lager bier is beer that has been stored for some months in vaults. Its name is nearly equivalent to the English name, "stock" ale. The vaults are made of great capacity, often of stone, under the breweries; and such receptacles are essential in the production of good lager bier. It is a favorite drink with the Germans, and the demand for it with this class of our population has led to its extensive manufacture in this country. As in Bavaria itself, its use is almost an essential article of diet with the laboring classes, and to some extent it takes the place of animal food. Drunk as it often is to the amount of more than a gallon a day, but little other food than bread is required to satisfy the appetite. But this free use of it should be

condemned, from the tendency to produce apoplexy and palsy.—The stronger beers, like those of northern Germany, are especially objectionable from their dangerous effects upon the health.—For the following analyses of several of the best known European and American beers, we are indebted to an excellent paper upon this subject, published by Fenner von Fenneberg, of New York city:

	Water.	Malt.	Alcohol.	Carbonic acid.
Larchel's "Holy Father Beer,"				
Munich.....	81.95	12.08	4.94	0.08
Salvator beer, Munich.....	87.83	7.97	4.50	0.30
London ale.....	76.08	15.88	8.08	0.01
Double porter, Barclay, London.	88.74	5.98	6.10	0.18
Pale ale, London.....	89.85	4.50	5.65	—
Philadelphia lager bier.....	92.16	4.86	8.40	0.06
Reading lager bier.....	91.80	4.66	8.76	0.18
Walter's lager bier, Williamsburg	91.80	4.65	8.44	0.11
Bavarian lager bier, Munich.....	90.95	4.70	4.84	0.04

At the date of this paper (1854), it was stated there were no less than 27 breweries in the city of New York, several of which brewed more than 10,000 barrels, of 80 gallons each, of lager bier in the course of the year. In Williamsburg there were 13 breweries; in Brooklyn, 8; on Staten Island, 8; in Albany, 8; Buffalo, 7; Philadelphia, 28; Pittsburg, 11, &c. The production of those of New York was estimated at 85,000 barrels of lager bier, and from other places were introduced 17,500 barrels more, making the consumption of the city at that time about 8,075,000 gallons. The cost of a barrel, which varies with that of grain and hops, was estimated from \$3 50 to \$4. Hops then cost from 45 to 50 cents per pound, and a bushel of malted barley from \$1 37 to \$1 50. To produce 40 barrels of lager bier there are consumed 50 bushels of malt, 60 pounds of hops, and 3 gallons of yeast. A single brewing of this quantity requires $\frac{1}{2}$ a ton of coal. The hands in a German brewery are paid monthly from \$10 to \$25, beside their full board and free use of as much beer as they can drink. The season for brewing begins late in October and closes early in April.

BEER. I. WILHELM, a brother of Meyerbeer, the great composer, born Feb. 4, 1797, died March 27, 1850. He was established as banker at Berlin, and in 1849 he became a member of the Prussian diet. His claim to notice rests upon his achievements in the sphere of astronomical science. His labors in this department were associated with those of the astronomer, Mädler. Beer built an observatory, chiefly devoted to the observation of the planet Mars and the moon. The crowning labor of the 2 astronomers was a map of the moon, published in 1836, upon which the Lalande prize was conferred by the French academy. II. MICHAEL, a brother of the preceding, born in Berlin, 1800, died in Munich, March 22, 1838, became known to the literary world by 5 tragedies, of which his *Struensee* is the best. His complete works were published at Leipsic in 1835, and his "Correspondence" in 1837. (See MEYERBEER.)

BEEREN, Grossa, a Prussian village, pop. 242, memorable for the great battle of the 22d and

28d of August, 1818, in which the French troops were defeated by the Prussians.

BEERNEM, a village of Belgium, 5 miles S. E. of Bruges. It has trade in cattle and in linen goods, and has also mills for flour, malt, and oil. Pop. in 1851, 8,440. The village is the seat of the reform school for girls under the charge of the sisters of charity, the complement of the reform school for boys at Ruyselede. The pupils are instructed in every department of household duty, as well as in the elements of common school education. The discipline of the school is that of kindness and affection only.

BEERS, NATHAN, an officer of the army of the revolution, born at Stratford, Ct. 1758, died at New Haven, Feb. 10, 1849. While still quite young, he went with his father to New Haven, and was a member of a military company formed there in 1774, which was commanded by the celebrated Benedict Arnold. Immediately on the receipt of the news of the battle of Lexington, the company was called together by their captain, and Beers with 89 others volunteered to accompany him to the seat of war. They immediately set out, and, as they passed through Pomfret, were joined by Gen. Putnam. Beers received a lieutenant's commission in the army in 1777, and served until 1788. He was afterward engaged, for a time, in mercantile affairs, and, in 1798, was chosen steward of Yale college, which office he resigned in 1819. He was a man of integrity, courtesy, and piety.

BEER-SHEBA. As the traveller to Palestine emerges from the desert of Sinai, upon the southern frontier of the holy land, he begins to meet with deep artificial excavations, often through solid rock, and covered with stone slats. These are the wells of Palestine. Among the first that greet him are the wells of Beer-sheba. This place of Old Testament renown, as identified in the 14th century, is situated about midway between the southern point of the Dead sea and Rafa on the Mediterranean, and is at present known as Bir-es-Seba. The name signifies "the well of covenant," and doubtless was so designated to commemorate the covenant between Abraham and Abimelech. Near it Abraham planted a grove of tamarisks. A town of some importance naturally grew up, in those desert places, around a well. Beer-sheba lying on the southern frontier of Palestine, and Dan on the northern, "from Dan to Beer-sheba" came to be used to signify the entire extent of the country. Dr. Robinson found still 2 circular wells in tolerable preservation, about 55 rods apart, one 44 feet deep to the water, and the other only about 12 feet, the deeper one excavated through solid rock for the lower 16 feet. It was generally much labor to construct these wells, and from their importance in so desert a country, we can well understand how the strife arose which in its adjustment gave the name to Beer-sheba. This town fell originally to Judah, but was afterward transferred to Simeon. It was an important

judicial station under Samuel, and a seat of idolatry in the time of Uzziah. From this time we lose sight of it until it is mentioned again in the 4th century of the Christian era by Jerome and Eusebius, as a flourishing village.

BEET, a plant of the genus *beta*, belonging to the natural order *chenopodea*, among which it is known by its large succulent roots and a green calyx united half way to a hard rugged nut. The species are found in Europe, the north of Africa and the western parts of Asia. Four species of this genus are cultivated as esculents; the others are mere weeds. The common beet, or *beta vulgaris*, is found in a wild state in Egypt and along the whole of the seacoast of the Mediterranean. There are several varieties, differing in the form, size, color, and sweetness of their roots. The "small red" and the "long yellow" are the most sweet and delicate, and have the richest color when served at table. Beet roots can only be obtained in perfection in a rich, light, sandy soil, through which they can easily penetrate. In stony or stiff soils the roots become parched and lose their succulence. Mangel-wurzel, or *beta altissima*, is a much larger and coarser plant than the common beet, from which it differs by its roots being marked internally with zones of red and pink or white. Its native country is unknown. It is extensively cultivated in Europe for feeding cattle; its leaves affording a very nutritious food for all kinds of live stock, and its roots, from their exceeding sweetness, being considered one of the most valuable plants on which cattle can be fed in winter. There are few crops so valuable for this purpose. Swedish turnips, or *ruta baga*, exceed them in the quantity of nourishment, weight for weight; but on good light soils the produce of the beet per acre is much greater. The proportional value of hay, potatoes, Swedish turnips, and beets in feeding cattle, is said by Einhof and by Thær to be as follows: 18 tons of mangel-wurzel are equal to 15 tons of Swedish turnips, or $7\frac{1}{2}$ tons of potatoes, or $8\frac{1}{2}$ tons of good English hay, each quantity containing the same amount of nourishment; but the roots may be grown upon less than an acre of ground, while two or three acres of good grass land are required to produce the equivalent amount of hay. The beet root is also deemed the least exhausting to the land.—The white beet has been chiefly cultivated for the purpose of extracting sugar from its juice. It is smaller than the mangel-wurzel and more compact. The manufacture of sugar from beet root was first commenced in France in consequence of the Emperor Napoleon's scheme for excluding British colonial produce. It was known that a crystallizable sugar could be obtained from the juice of the beet root, and he encouraged the establishment of beet root sugar manufacture on a large scale, by every advantage which monopoly and premiums could give it. Colonial sugar was sold as high as a dollar a pound; and as sugar had become an indispensable luxury in France, the

manufacture had every chance of rapid and complete success, although the process was expensive. It has since been much improved, and beet root sugar now competes on nearly equal terms with colonial or cane sugar, in the markets of the world. Most of the operations in manufacturing beet root sugar are nearly the same as those by which the juice of the sugar cane is prepared for use, but much greater skill and nicety are required in rendering the juice of the beet root crystallizable, owing to its greater rawness and the smaller relative proportion of sugar it contains. When beet root sugar is refined, however, it is said to be impossible for the most experienced judge to distinguish it from the other, either by the taste or the appearance. Five tons of clean roots produce about 4½ cwt. of coarse sugar, which gives about 160 lbs. of double refined sugar and 60 lbs of inferior lump sugar; the rest is molasses, from which spirits of good quality are distilled.—The chard beet, or *beta cyclo*, inferior in the size of its roots, is remarkable for the thickness of the ribs of its leaves, which are white, yellow, green, orange colored, or deep crimson, in different varieties. It is cultivated like the common beet in gardens, and forms one of the principal vegetables used by agricultural laborers and small occupiers of land in many parts of Germany, Switzerland, and France. Swiss chard produces numerous large succulent leaves, with a very solid rib running along the middle. The leafy part stripped off and boiled is used as a substitute for greens and spinach; the rib and stalk are dressed like asparagus or scorzonera; they have a pleasant sweet taste, and are deemed by some persons more wholesome than the cabbage tribe; but in other varieties, they have an earthy taste which is unpleasant.—Sea beet, or *beta maritima*, is a perennial, and one of the most valuable plants known for greens. It thrives in gardens without any sort of care, and is increased by seeds which it yields in great abundance.

BEETHOVEN. I. **LUDWIG VAN**, probably a native of Maestricht in Holland, was a base singer of considerable reputation, in the electoral chapel at Bonn, and in opera. About 1761 he was elevated by the elector Maximilian Frederic to the position of kapellmeister, which office he seems to have held until the appointment of Lucchesi in 1771. He composed several operas, none of which, however, are now preserved. He died Dec. 24, 1773. II. **LUDWIG VAN**, one of the greatest of musical composers, son of Johann van Beethoven, a tenor singer in the electoral chapel at Bonn, and grandson of the foregoing, born Dec. 16 or 17, 1770, died at Vienna, March 26, 1827. He was the second of 4 children, the first of whom died in early infancy. The habits of Johann van Beethoven were bad, and soon after the death of Kapellmeister Beethoven the family sank into poverty. It is probable that Ludwig exhibited proofs of his remarkable musical talents at a very early age, and that his father indulged the

hope of deriving fame and profit from his precocity, as had then very recently been the case with Leopold Mozart and his son Wolfgang, for before the boy was 4 years of age, he was placed at the harpsichord, and forced, unrelentingly, to perform his daily task of exercises. He soon required better instruction than his father could give, and became successively the pupil of Pfeiffer, oboist in the chapel, and of Van der Eder, court organist. In 1781 Van der Eder was succeeded by C. G. Neefe, and the pupil was transferred to him. A musical periodical of that day, in a letter describing the musical establishment at Bonn, probably written by Neefe himself, includes the boy among the musicians, and speaks of him thus: "Louis van Beethoven, son of the above-named tenorist, a boy of 11 years and of very promising talents. He plays the harpsichord with great skill and power, reads well at sight, and, to say all in a word, plays nearly all of Sebastian Bach's *Wohltemperirtes Klavier* placed in his hands by Herr Neefe. He that knows this collection of preludes and fugues in every key (which may almost be called the *no plus ultra* of music) will know what this implies. Herr Neefe has also, so far as his other duties allow, given him some instruction in thorough base. At present he is exercising him in composition, and for his encouragement has caused 9 variations composed by him upon a march, for the harpsichord, to be engraved at Mannheim." Beside these variations, we possess a specimen of his powers at this early age, in 8 piano-forte sonatas, dedicated to the elector and printed at Spire. In 1788 the elector died, and fortunately for the young Beethoven was succeeded by Maximilian Francis, a member of the music-loving family of the empress Maria Theresa. Attached to the young elector's court was a certain Count Waldstein, his bosom friend, a practical musician and familiar with the music of Vienna, where, at that time, Gluck, Haydn, Salieri, Righini, &c., reigned supreme. The count soon discovered the promise of the boy, and became his protector. Through his influence, Beethoven, in his 15th year, was appointed assistant court organist, and in his 18th was sent to Vienna at the elector's expense, to study with Mozart. The illness of his mother recalled him to Bonn, and her death about the end of July, 1787, doubtless was the cause of his remaining for the present there, for, owing to the habits of his father, the support of his two young brothers, Kasper Anton Karl, born April 8, 1774, and Nicholas Johann, Oct. 2, 1776, must, in a great measure, have devolved upon him. The 4 succeeding years must have been years of great exertion to the young man. His salary could not have been large, either as organist or as member of the orchestra, in which he played the viola; nor were the profits of teaching great. His position in the orchestra as player of the viola would be a sufficient refutation of the oft-told anecdote of Beethoven and the spider, did we not know that the real hero of the story was Berthame,

a Parisian violinist. In 1792, his brothers being off his hands (Karl a music teacher, and Johann an apothecary's boy), Beethoven was again in a position to accept the elector's kindness, and returned to Vienna; which capital, and its environs, save upon a single visit to Berlin, one or two to Prague, and his summer journeys for health to various watering places, he never again left. The young composer reached Vienna a few weeks before completing his 22d year. With the modesty of real talent he suppressed all his previous attempts at composition, and came before the public only as a piano-forte virtuoso. In this field he had but one rival—for Mozart had died the year before—Joseph Woelfl; and the only rivalry between them was in execution, of which Woelfl was an astonishing master. In force, fire, and originality of conception, Beethoven was far the greater of the two. The first 5 years of his sojourn in Vienna were the happiest of the composer's life. He mingled in the best society, was the favorite of people of the first rank, and was placed at the head of his profession by the best judges. In the mean time he was making himself master of musical form, studying successively with Haydn and the renowned contrapuntist Albrechtsberger, kapellmeister at St. Stephen's. The somewhat dry but thorough course of study pursued under the latter, may be followed by the musical student in the work known as "Beethoven's Studies," which is made up from the lessons original and selected given him by his teacher, and is often enriched by the shrewd, witty, and caustic remarks of the gifted pupil. The annexation of Cologne to the French empire, and the expulsion of the elector, at length left Beethoven free to remain in Vienna and devote himself to composition, the science of which he had now thoroughly mastered. The first important works which he sent to the press were the 8 sonatas, op. 2, and the 8 trios, op. 1, but others followed with a rapidity truly astonishing. It is not possible to arrange the works of this master in the order of their composition, and to decide how many, of his earlier productions especially, belong to a given period. It is certain, however, that before the close of the last century the list included many variations and songs, more than 20 sonatas for the piano-forte solo, 8 (probably more) sonatas for piano-forte and violin, 8 for piano and violoncello, 3 trios for piano, violin, and violoncello, that in B \flat with clarinet, the quartet for piano and bowed instruments, the quintet for piano and wind instruments, the concertos in C and B \flat for piano and orchestra, 5 trios, 6 quartets, the quintet in E \flat for bowed instruments, the septet, the ballet "Men of Prometheus," and the 1st and 2d symphonies! Such fertility certainly promised a career in no respect behind those of Handel, Bach, Haydn, and Mozart. But he was already suffering from a calamity which afterward greatly limited his productiveness, but which we may consider the cause of the profound depth of sentiment, feeling, and passion, which

is the leading characteristic of the music of Beethoven. In a letter to his friend, Dr. Wegeler, dated June 29, 1800, he says: "My hearing has been gradually becoming weaker for 8 years past." The original cause of this misfortune was a hemorrhoidal difficulty, and a consequent chronic weakness of the bowels, attended with violent colic. He describes the symptoms of his case and its treatment by physicians, and adds: "I may say that I feel myself stronger and better in consequence, only my ears—they are still ever ringing and singing day and night. I can truly say that I pass a wretched existence; for the last 2 years I have almost entirely shunned society, because it is impossible to tell people I am deaf!" Again: "In the theatre I am forced to lean up close to the orchestra to understand the actors. The higher tones of the voices and instruments, if I am at a little distance, I cannot hear, and it is remarkable that people do not notice it in conversation with me." In the summer of 1802 he had a dangerous attack of illness, and in the prospect of death, wrote a remarkable paper, addressed to his brothers, in which he paints the sufferings which he had passed through in very powerful language. We quote a few lines: "Born of an ardent, sanguine temperament, and peculiarly susceptible to the pleasures of society, yet at this early age I must withdraw from the world, and lead a solitary life. When I at times have determined to rise superior to all this, oh, how cruelly have I been again cast down by proofs doubly painful of my defective hearing, and yet it has been utterly impossible for me to say to people, 'Speak louder, scream, for I am deaf!' Ah, how could I proclaim the weakness of a sense which I ought to possess in a higher degree than others, which once I did possess in the highest perfection—a perfection equalled by few of my profession. Alas, I cannot do this! Forgive me then, if I draw back when I would gladly mingle with you. My misfortune inflicts upon me a double woe in causing me to be misapprehended. For me there can be no recreation in social intercourse, no joining in refined and intellectual conversation, no mutual outpourings of the heart with others." Again: "But what humiliation, when some one standing by me hears a distant flute, and I hear nothing, or listens to the song of the herdsman, and I hear no sound. Such incidents have brought me to the verge of despair—a little more, and I had put an end to my life. One thing only, art—this restrained me. I could not leave the world until that was accomplished which I felt was demanded of me." This period was a crisis in his life. Upon his recovery from his illness, though he had little hope of ever recovering his hearing, he became more patient and cheerful, and again wrought out his musical inspirations with great industry. Among the numerous compositions of the few following years are several of his capital works. The "Heroic Symphony" was produced in 1804; "Fidelio"

in 1805; the 4th, 5th, and 6th symphonies, and the mass in C, during the 4 following years. It is a common impression, that the ill success of his opera, "Fidelio," discouraged Beethoven ever after from attempting dramatic compositions. His negotiations with various poets, Körner, Rellstab, Grillparzer, Bernard, for a libretto, even down to the close of life, and especially a formal written proposition dated in 1807, and still in existence, to the management of the imperial theatres for an engagement as regular composer, show how erroneous is the impression. What prevented the acceptance of Beethoven's proposition by the managers is not now known. The music to Kotzebue's "Ruins of Athens" was first performed in 1812; the "Battle of Vittoria" and the 7th symphony in the autumn of 1813; the cantata, "The Glorious Moment," at the Vienna congress in 1814; and the 8th symphony was written as early as 1816. The labors of the summer of 1815 were principally devoted to the arrangement of the Scottish songs for George Thompson of Edinburgh. From this period the works of Beethoven followed each other in still less rapid succession, not only from the grandeur and extent of their designs, but from the effects produced upon him by a legal process, which claimed much of his attention, and caused him the deepest anxiety. The last half-dozen sonatas, those giants of piano-forte composition, the grand mass in D—a 3 years' labor—the overture in C, op. 115; the 9th symphony, with chorus, completed in 1824, the last grand quartets, were the principal productions of his last 10 years. The legal process above mentioned was too important in its influence to be passed over without some notice. Karl van Beethoven had been unfortunate in his marriage, and upon his death in 1815 had left his son to the special care and protection of the composer. The mother, although she soon became the kept mistress of a citizen of Vienna, refused to part with her son, and Beethoven was forced to bring the case before the courts. The will of the father was not sufficient ground by the laws of Austria for removing the child from his mother, nor his legal adoption by his uncle. It became necessary for Beethoven to prove the bad character of his sister-in-law, and show that the moral welfare of the boy demanded his removal from her influence. This, to a man who in the corrupt society of Vienna had lived a blameless life, and who had his friends and acquaintances principally among princes and the nobility, was in the last degree mortifying. Its effect upon him was so great that nothing but the necessity of meeting the large expenses entailed upon him by the process, and by his adoption of the boy, induced him to meet the demands of his publishers. During 3 years not one of his great works was produced. The suit was originally brought in 1816, in the court in which the causes of the nobility were tried, and after 2 or 3 years, during which the boy was sometimes in possession of the mother

and at others of the uncle, was decided in favor of the latter. The opposing counsel thereupon brought a technical objection to the proceedings, viz., that Beethoven was not of noble birth, and could not bring suit in this court; that *even* in Holland was not equivalent to *even* in Germany. The point was sustained, to Beethoven's great indignation, and the suit was transferred to the magistrates' court of the city, clearly the proper place, as Beethoven had been made a citizen of Vienna, some years before, as a mark of honor. The former decision was here reversed, and Beethoven was obliged to bring a new action. It was not until some time in the year 1821 that he obtained full possession of the boy. In the mean time the nephew had fallen into habits of indolence, falsehood, and extravagance beyond the power of his uncle to restrain or control. Johann van Beethoven, the composer's younger brother, was mean, sordid, and vain, and married to a woman who brought her illegitimate daughter to his house, and not seldom received her own lovers there. For such a man Beethoven could have little fraternal affection. The nephew became all in all to him. Upon him he lavished all the rich affections of his great heart. No pains nor expense was spared on the young man's education; but in vain. In August, 1826, the youth, then about 20 years of age, unable to pass the examinations of the school to which he belonged, filled up the measure of his ingratitude by shooting himself in the head. The wound was not fatal, and at length he recovered. By the laws of Austria, he was an offender against public morals and the church, and for some months was deprived of liberty. When at length restored to his uncle, it was with the order to leave Vienna in 24 hours. In his extremity Beethoven accepted the invitation of his brother to retire with Karl to Johann's estate some 80 miles above Vienna, on the Danube, until such time as a place in the army could be found for the young man. The place and the society of his brother's family soon became insupportable to the composer, and he determined to return to the capital. This journey of 2 days, in cold, wet weather, was too much for his feeble constitution, and he reached Vienna, Dec. 2, 1826, with his nephew, laboring under the effects of a very severe cold. A few days afterward a billiard marker of one of the coffee houses was taken to the hospital sick, where he informed Dr. Wawruch, clinical professor in the university, that Karl van Beethoven had requested him to send a physician to his sick uncle, and besought Dr. Wawruch to call. During the days that had elapsed, a violent inflammation of the lungs had set in, and the professor found Beethoven in a very bad condition. The inflammation subsided, but was succeeded by dropsy, under which the illustrious patient sank, and a quarter before 6 in the evening of March 26, 1827, in the midst of a sudden storm of rain, hail, and lightning, breathed his last. Notwithstanding the great expenses to which Beethoven

had been put, during most of his life, by ill health, and the sums which he had spent for his brothers and nephew, during the long-continued legal process mentioned above, he left property to the amount of about \$5,000, a fact which sufficiently refutes the common impression that he passed his life in abject poverty.—In the catalogue of Beethoven's works, we find hardly a branch of the art in which he had not wrought, but the preponderance of the instrumental over the vocal music is striking. For the full orchestra he has left us 9 symphonies, 11 overtures, the Egmont music, the battle of Vittoria, and some shorter pieces. Of chamber music the compositions—among them 16 grand quartets, and 4 trios for bowed instruments, from the grand concerto and septet down to the romanza and sonata—are very numerous. There are 83 grand sonatas for the piano-forte solo, and more than 100 other compositions, varying from the grand concerto to the variations upon a melody for that instrument alone or combined with others. Two masses, 1 sacred cantata, and a number of songs, belong to the branch of sacred music; an opera, and a vast variety of songs, trios, &c., fill up the catalogue of his vocal music. Beethoven's mission, if we may use the term, was to perfect instrumental music as the language of feeling and of the sentiments. Under Bach, Haydn, and Mozart, the sonata and the symphony had attained their complete development in form. Under Beethoven, a new soul was infused into them. Something had already been done in this direction. We perceive traces of it in Bach, and in Mozart. Clementi had written a sonata for piano-forte, entitled *Dido Abbandonata*, and Haydn, in quartet and symphony, was in the habit of imagining some story, the situations of which, in their corresponding emotions, he endeavored to depict. Beethoven went further. He not only painted character as no other master had done in music (see his overtures to Prometheus and Coriolanus), but made his music the medium of communicating the feelings which swelled his own breast. We feel this continually in his piano-forte sonatas, nor is the explanation of the fact difficult. The unremitting practice to which he was forced by his father during childhood, together with the course of instruction then in vogue, which aimed rather at making sound musicians, than masters of finger gymnastics, gave him that power over the piano-forte and the organ, without which no one can be said to have a mastery over those instruments. We speak of the mastery of style in an orator, when his thoughts, as they rise, clothe themselves at once in language forcible, appropriate, and elegant. So a complete mastery of the piano-forte and organ implies that the musical thought, as it rises in the composer's mind, suggests immediately the combinations and successions of notes which will express it, and the instantaneous dropping of the fingers upon the corresponding keys of the instrument. This

mastery Beethoven, in common with all the really great masters, had, and it was tempered even in his youth by such a knowledge of the principles of harmony, that his extemporaneous performances were as free from false harmonic relations, as the speaking of an accomplished orator from errors in the use of articulate speech. As he advanced in years his improvisations attracted more and more notice, and upon his arrival in Vienna, men who had known Mozart and fully appreciated his marvellous powers, confessed their astonishment at the force, vigor, and fire of the young Rhinelander when, giving his fancy the rein, his flying fingers interpreted the current of his musical thoughts. In his earliest published works will be found much of that pensive feeling which distinguished his extemporaneous efforts, and this quality in his sonatas became more marked as he advanced in years. Hence the marvellous fascination of his sonatas for every appreciative performer or hearer. They appeal to our hearts as the language of his own. They paint to us his moments of joy and of sorrow; of hope and of longings for that which is loftier and nobler—longings oft-times which can be uttered only in music. When writing for the orchestra the grandeur of his thoughts rose with the increase of means at his command, and he reached heights beyond all that composers before him or since have attained.—Justice has not usually been done to Beethoven on the score of intellect. His large head was in fact filled with a brain capable of intensely energetic and long-continued action. He was an insatiable reader, especially of history, and none followed with a deeper interest the rapidly changing scenes of that great political drama which began in his 19th year in Paris, and ended at the congress of Vienna in 1815. Born upon the Rhine, reared under the remarkably liberal institutions of the electorate of Cologne, and subjected to the direct influence of those ideas which set France in a blaze, he was early and for life a republican in his politics. He had not the education of a scholar, and the universal fact which obtains in regard to men of strong minds and great reflective powers, who have not enjoyed the advantages of high culture, obtains also in his case, viz.: a tendency to put full faith in conclusions founded upon insufficient data, and to consider their confessedly high authority upon subjects to which they have devoted themselves as a guarantee of the correctness of their views upon others. This argues not a want, but rather the possession, of a high degree of intellectual power. In whatever sphere of mental activity Beethoven had been placed, he would have been a man of mark. The exciting social, religious, and political topics, which agitated all Europe during the age of Beethoven, are familiarly known to all. Upon these topics he studied, pondered, reflected, and the aspirations, hopes, triumphs—the grief, woe, and despair of that age, found a place in his all-embracing sympathies. We perceive a tendency in his early

orchestral works, while still influenced in his style by Haydn and Mozart, in the direction which, as stated above, his piano-forte music followed—to become the medium through which the composer made known his feelings. But when, still in the prime of life, he found the sense most necessary to the musician forsaking him, and under this calamity he gradually withdrew himself from society, retaining a few old friends, but making comparatively few new ones, the tendency became more marked. As years passed on and old friends fell, he retired more and more within himself, trusting more fully to the impulses of his genius, uninfluenced by modes and fashions and popular styles; then it was that the rich stores of musical knowledge, acquired in his younger and happier days, were lavished upon works, the depths of whose thoughts, and the grandeur of whose designs, so far surpassed the appreciation of many of his contemporaries as to be condemned as the vagaries of a madman. As Gothic architecture is the artistic record of the aspirations of the ages during which it grew to perfection, so the orchestral works of Beethoven are the musical record of the great ideas of his time in the form and likeness which they assumed in his mind. Haydn and Mozart perfected instrumental music in its form—Beethoven touched it, and it became a living soul.

BEETLE, a very numerous and well-known order of insects, constituting the *coleoptera*. They have usually 4 wings: 2 membranous, the organs of flight, filmy and folded transversely; and 2, anterior and superior to these, of a harder consistence, protecting the former, and called *elytra*. They all have mandibles and jaws. The attention of naturalists has been specially called to this order, the most numerous among insects, from their singular forms, brilliant markings, size, and ease of preservation; so that their structure, habits, and transformations are very well ascertained. The head varies greatly both in size and form in the different tribes; it presents 2 *antennae*, of various forms, of which the joints are generally 11 in number; the eyes are 2, and compound; they have no simple eyes, according to Latreille. The mouth consists of a *labrum*; 2 mandibles, usually of a horny consistence; 2 jaws, each one having 1 or 2 *palpi*; and a *labium* of 2 pieces, accompanied by 2 *palpi*. The anterior segment of the *thorax*, or the corselet, which is in front of the wings, is larger than the other 2 segments, and is free in its movements; it supports only the first pair of legs; the other segments are united together, and nearly immovable; the *mesothorax* supports the second pair of legs and the *elytra*; the membranous wings and the third pair of legs are attached to the third and last segment. The *elytra* and wings originate from the lateral and upper portions of the segments; the former are of a firm consistence, almost crustaceous, and, in a state of rest, are applied horizontally one against the other along their internal edge;

they almost always conceal the true wings, and are generally as long as the body; in the act of flight they are usually extended, though in some species destitute of true wings they are united on the dorsal suture; in the wingless genera the *elytra* are always found. The abdomen is sessile, or united to the chest by its greatest breadth, composed of 6 or 7 rings, membranous above where it is protected by the *elytra*, and of a more horny consistence below. In the males the anterior pair of legs are often stronger, and the tarsi broader, than in the females. All the *coleoptera* masticate, and are accordingly provided with instruments proper for cutting and triturating their food; the salivary glands are quite rudimentary, and few in number; the digestive canal varies in length according to the habit of life, but it generally is much longer than the body. The sexes are separate, and the act of reproduction is a true sexual connection. The organs of respiration are *stigmata* along the sides of the body, and *tracheae* pervading all parts of the system. The abdomen encloses a fatty tissue, apparently connected with nutrition, which causes many of these insects to be eagerly sought for as food by the savage tribes of the old world. They undergo a complete metamorphosis; and the *larvae*, or grubs, are generally soft bodied, and provided with 6 legs; it is in this state that they are so destructive to vegetation. The males perish soon after the sexual union, and the females die shortly after the eggs have been deposited.—The *coleoptera* have been variously divided by different authors; the divisions of Latreille, according to the number of the joints in the tarsi, have been generally adopted by naturalists. These divisions are the following: 1, *pentamera*, having 5 joints on each foot; 2, *heteromera*, having 5 joints to the anterior 2 pairs of feet, and 4 joints to the posterior pair; 3, *tetramera*, having 4 joints to all the feet; 4, *trimera*, having no more than 3 joints to the feet. Though this system is artificial, and in many points very defective, it is still sufficient to give a clear idea of this very complex order. In the short space of this article little more can be done than to enumerate the families of the order, with very brief notices of some of the most remarkable.—Latreille makes 20 families, as follows. The *pentamera* include: 1. The *carnivora*, whose varied species all agree in being exceedingly voracious; they are both terrestrial and aquatic; the former have been divided into the tribes *cicindela* and *carabici*, the latter constitute the tribe *hydrocanthari*. The *cicindela* are very beautifully ornamented, of light and active forms, quick in their motions, darting on their insect prey, which they devour alive; they prefer light and sandy districts exposed to the sun; they are extensively distributed over the earth; the *larvae* are of a forbidding appearance and extremely voracious, seizing any insect which passes the openings of their subterranean holes. All the *carabici*, in the grub and perfect state, feed on living prey;

they emit a fetid liquid when pursued, and are for the most part agile runners; many have no true wings; they conceal themselves in the earth or under stones and the bark of trees. This is a very numerous tribe, and its study is difficult. Some of the most interesting genera are *carabus*, *scarites*, *harpalus*, *brachinus*, *feronia*, &c. The *hydrocanthari*, or swimming beetles, include the genera *dytiscus* and *gyrinus*; the feet are adapted for swimming, being compressed and ciliated; they live in the fresh lakes and marshes and quiet streams of all countries, and they pass their first and final stages in the water. The *dytisci* can live on the land and also can fly; they vary in size from $1\frac{1}{4}$ inch to $\frac{1}{4}$ of an inch in length; they are carnivorous and voracious, and can remain a long time under water in pursuit of their prey; they swim on the surface with great rapidity. The *gyrini* are smaller, and may be found in troops on the surface of still waters, darting about with surprising agility; they can see in the water and in the air at the same time; they can fly well, though they swim better; the eggs are deposited on the leaves of aquatic plants. This family is useful in destroying noxious and predacious insects and grubs. 2. The *brachelytra* have but 1 palpus in the jaws, or 4 in all; the wing cases are shorter than the body, which is narrow and elongated; the head is large and flat, the mandibles strong, the antennae short; they live in moist earth, on dung and other excrementitious matters, and most of all in decaying animal carcasses; they are courageous and strong, running or flying with the greatest facility; they destroy insects with eagerness. This family is composed entirely of the old and vaguely determined Linnean genus, *staphylinus*. The larvae live in the same situations as the perfect insects. The family are very useful natural scavengers. 3. The *serricornes* have elytra covering the abdomen, and antennae equal throughout, dentated, saw-like or fan-like. Some of the most interesting genera are: *Buprestis*, many of whose species are very large, and exceedingly brilliant; these walk very slowly, but are excellent flyers; they are most numerous in warm climates, and live generally in wood. The genus *elater* is remarkable for the shortness of the legs, and for the faculty it has of changing from a supine position to its feet by springing into the air by means of a spine on its præsternum; the species are found in flowers, or plants, and on the ground; some of the American species, as the *E. noctilucus*, are phosphorescent, and are called fire-flies. The genus *lampyris*, also, is interesting, as containing the phosphorescent species whose females go by the name of glow-worms; the genus *telephorus* is noted as furnishing the species which are occasionally taken up by high winds, and deposited in distant regions, causing the so-called insect showers; the tick of the death-watch is produced by a species of *anobium*, living in decaying wood. The larvae sometimes

cause great destruction of valuable timber. 4. The *clavicornes* have the antennae thickened, or knob-shaped, at the end; they live chiefly on animal substances. The genus *hister* feeds on decaying and excrementitious matters. The genus *neorophorus* is noted for its habit of entering small animals, such as mice and moles, for the purpose of depositing its eggs in the decaying carcass; this they do by removing the earth beneath the body, which falls into the hollow; their sense of smell must be extremely acute. The genus *silpha* also prefers putrefying animal substances. The genera *dermestes* and *anthrenus*, in their larva state, are perfect pests to the naturalist, as they devour every animal substance accessible in his cabinet; the action of heat, usually employed to destroy them, is nearly as destructive as the insects. 5. The *palpicornes* resemble the preceding family in the shape of the antennae, composed of only 9 joints, and the feet in most of the genera are formed for swimming. The genus *hydrophilus* is carnivorous and voracious, frequenting fresh water and marshes, swimming well, but not so rapidly as *dytiscus*; their larvae destroy great numbers of aquatic insects and water-snails; they pass the nymph state in cavities in the earth, for about 8 weeks. Other genera are *elophorus* and *spharidium*; the latter is terrestrial. 6. The *lamellicornes* are the last family of the *pentamera*, including numerous genera, among which are some of the most brilliant and the largest of the order; those that feed on vegetable substances are beautifully colored, while dark tints prevail among those which devour decaying animal matters. The antennae are deeply inserted under the side of the head, short, ending in a knob, composed of plates or *lamina*. An idea of the form of the larvae, which are often very destructive to vegetation, may be formed from the well-known white-worm, the larva of the *melolontha*. In this family are included the genus *scarabæus* of Linnaeus, proper to warm climates, particularly Africa; they live in ordure of all kinds; the *aleocharis sacer*, an object of religious veneration among the ancient Egyptians, and often represented on their monuments, and found in the sarcophagi, belongs to this genus; other genera are *copris*, *geotrupes*, *trox*, *melolontha*, *cetonia*, and *lucanus* (stag beetle). While many of the melolonthians are destructive, the *geotrupida* and *scarabæida* are useful in removing carrion and filth.—The *heteromera*, the 2d section of the order, are all vegetable feeders; many of them avoid the light; it includes: 7. The family *melasoma*, of black or ash-colored species, for the most part apterous, with the elytra as it were soldered together; some of them have a salivary apparatus; they dwell on the ground, under stones, and in dark situations in houses, quitting their retreats at night; they are slow in their movements. Among the genera are *pimelia*, *blaps*, and *tenebrio* (meal-worms). They and their larvae are useful scavengers. 8. The *taxicornes* have no corneous tooth on the inner side

of the jaws; all are winged, and the legs are not adapted for running; in the males the head is sometimes furnished with horns. Most live on tree fungi or under the bark, or under stones on the ground. Some of the genera are *diaperis*, *phaleria*, and *eledona*. These fungus-eaters are useful to man. 9. The *stenelytra* differ from the preceding chiefly in the antennæ; they are quite active, concealing themselves under the bark or among the leaves and flowers of trees; some live in fungi, others in old wood. To this belong the genera *helops*, *cistela*, *dircaea*, *adomera*, and others serviceable to man. 10. The *tracheleides* live on plants, of which they devour the leaves and suck the juices. Here belong the genera *lagria*, *pyrochroa*, *mordella*, *notatus*, *horia*, *meloe*, *cantharis*, &c.; the *O. vesicatoria*, or Spanish fly, is well known in medicine for its blistering properties.—The third section, the *tetramera*, are vegetable feeders; they include: 11. The *rhynchophora*, a large and richly ornamented family, living very often in the interior of fruit and seeds, and very destructive to the products of the farm and the orchard; it is easily recognized by its projecting muzzle. Among the genera are *bruchus*, whose larvæ are very destructive; *attelabus*, *brentus*; *curculio*, the greatest pest of the horticulturist; *calandra*, one of whose species, the weevil, destroys immense quantities of grains; the larvæ of the *C. palmarum*, on the other hand, are considered a great dainty by the West Indian blacks. 12. The *xylophagi*, in the larva state, destroy or render useless great numbers of forest trees by the channels which they gnaw in various directions; among the most destructive is the genus *ecolytus*; other genera are *bostrichus* and *trogosita*. 13. The *platysoma* are found beneath the bark of trees; the principal genus is *cucujus*. 14. The *longicornes* have filiform and very long antennæ; their larvæ live in the interior or beneath the bark of trees, where they are very destructive. Some of the species are among the largest of the order. Among the genera are *parandra*, *cerambyx*, *callidium*, *lamia*, *saperda*, and *leptura*. 15. The *eupoda* derive their name from the large size of the posterior thighs in many species; they are all winged, and occur on the stems and leaves of plants, especially the *liliaceæ*; among the genera are *sagra*, *crioceris*, and *donacia*. 16. The *cyclica* are small, slow in their movements, but often brilliantly colored; the females are very prolific. Here are placed the genera *hispa*, *cassida*, *cryptoccephalus*, *chrysomela*; *eumolpus*, one species of which, *E. vitis*, in its larva state, commits great ravages in wine countries; *galeruca* and *altica*, possessed of great jumping powers; the latter is often very destructive to the turnip crops. 17. The *clavipalpi* are all gnawers, and may be distinguished by their antennæ ending in a knob, and by an internal tooth to the jaws; the body is usually rounded. Some of the genera are *erolytus*, *triplax*, *agathidium*, and *phalaorus*.—The last section, the *trimera*,

have the antennæ ending in a compressed club formed by the last 8 of the 11 joints; it contains: 18. The *fungicola*, living chiefly in fungi and dead wood; the principal genus is *eumorphus*. 19. The *aphidiphagi* are best represented by the genus *coccinella*, or lady-bird; these pretty little beetles, more especially in the larva state, live almost entirely on *aphides*, or plant-lice, and in this way are of immense service. 20. The *pselaphii* have short truncated elytra; the species are generally very small, and live on the ground in moist places, and under stones and moss; the types of this, the last family, are the genera *pselaphus* and *claviger*.—The coleoptera are exceedingly numerous in species. It is by the occurrence of *elytra* that this order may be at once recognized; these organs are highly ornamented, and they serve not only to protect the membranous wings, but to shield the body in the dark and dangerous places in which beetles delight to go; and by their broad expanded surfaces they assist the heavy species in their flight, acting both as a sail and a parachute.

BEFANA, in Italy the name of a puppet or doll dressed as a woman, and carried through the streets in procession on the day of Epiphany, and on some other feast days. The name is probably derived from *Epifania*, the feast of the Epiphany. On the day of this feast presents are given to children in Italy, as they are in America on Christmas or New Year's, and the *befana* is supposed to bring them.

BEG, BEX, BEGLERBEG, titles of honor among the Turks. The term beg means "lord;" the beglerbeg is "the lord of the lords." The beg is, in some parts of the empire, inferior to a pasha, holding a town or district subject to the supervision of the pasha. In the African provinces, the bey is the supreme officer of Tunis and Tripoli, and was the chief title among the Mamelukes.

BEGA, a river of Eastern Hungary. It joins the Theiss 21 miles east of Peterwardein, and forms a part of the Bega canal, extending from Facset to Beeskerek, a distance of 86 miles.

BEGA, CORNELIUS, a Dutch painter, born at Haarlem in 1620, died Aug. 16, 1664. He was a pupil of Ostade, whose manner he imitated. The subjects of his paintings are commonly the amusements of the Dutch peasantry, and the interior of cottages and taverns. When the plague in 1664 visited Holland, a young lady, whom he loved, was attacked by it, and abandoned by her friends. Bega remained by her side, rendering her every attention till her last moment. He, however, caught the fatal infection, and died of it.

BEGAS, KARL, a Prussian painter, professor, and member of the Berlin academy of fine arts, born April 30, 1794, at Heinsberg, near Aix la Chapelle, died in Berlin, Nov. 23, 1854. He studied first under Philippart, and in Paris under Gros. His first work, a copy of the Madonna della Sedia, attracted the attention of the king of Prussia, who appointed him painter

of the Prussian court. His productions comprise historical, genre, and portrait paintings, of which the most important are "Henry IV. at the Castle of Canossa," the "Sermon on the Mount," "Christ on the Mount of Olives," the *Lorelei*, the portraits of Humboldt, Schelling, Ritter, Rauch, Cornelius, and Meyerhper.

BEGGARY. See **PAUPERISM**.

BEGHARMI, or **BAGHEEMEH**, a country of central Africa, S. of the great Saharan region, and between the country of Waday on the east and that of Bornoo on the west. It extends as far as Lake Tchad, and with a south-easterly trend from that point, having for its western boundary the river Shary, it reaches to about lat. 8° 30' N. It is an irregular valley or basin formed by the slopes which feed the Shary and its tributaries. The inhabitants are probably a branch of the Gallas, who have overrun Begharmi as they have Abyssinia. Dr. Barth visited Begharmi in 1852, and to him we are indebted for what we know of it. The horses are said to be of the finest breed. The inhabitants are warlike, and often make predatory incursions upon their neighbors. They are possessed of considerable military skill, and are muscular and well formed. They are idolaters, so far as they have any religion. The capital of Begharmi is Mesna.

BEGHRAM, a plain in Afghanistan, and also the name of an ancient city of that country. Various relics, such as coins, rings, &c., have been discovered, but efforts to ascertain the precise site of the city of Beghrum have hitherto been unsuccessful.

BEGKOS, a village of Asia Minor. It is situated on a bay of the same name in the Bosphorus. In ancient Greek mythology, Begkos is known as the scene of the contest between Pollux and Amycus.

BEGSHEHER, **BEGSHKHR**, or **BEGSHEHER**, a lake, river, and town in Asia Minor, Carmania. The lake, which is 20 miles long and from 5 to 10 miles broad, is supposed to be the one anciently known by the name of Lake Coralis, or Karajeli. It contains a number of islands. The Begsheher river serves to discharge the waters of this lake into Lake Soglah. Its length is about 25 miles. On the banks of this river stands the town of the same name. It is built on both sides of the stream, the opposite quarters being connected by a stone bridge of 7 arches.

BEGUARDS. See **BEGUINS**.

BEGUINS, an order of Christians, who have received as many names as there have been opinions concerning their origin and character. They are called Bizochi and Bocasoti in Italy, and Beguards and Beghards in Germany, while by many they are confounded with the Beguines of Germany and Belgium, and with the Lollards who came after the Beguins, and sprung from them. The origin of the Beguins is historically dependent on that of the Beguines. The order of Beguines was founded by St. Francis of Assisi, who, after he had established the

order of Franciscan monks, perceived the necessity of providing for females, as well as for males, some specific mode of expression to the spirit of asceticism which had so greatly increased on the breaking out of the crusades (A. D. 1094). For those men who wished to devote themselves to the church, the priesthood offered itself, while the expeditions against the infidels in the possession of Jerusalem afforded ample vent for the zeal of the laymen. St. Francis instituted the order of Beguines (1206 or 1220) to meet the want which had begun to be felt by women who were unable to take the veil, and so devote themselves to a life of seclusion from society, beyond a limited time and degree, and who could not follow the armies of the crusaders into Palestine, as some of their sisters had done. But the fire of the crusades had begun to wane. The death of the emperor Henry VI., who had prosecuted the 4th crusade (1195), and the disastrous termination of the 5th (1198) on account of the plague, had cooled the ardor of the laymen for that kind of service. Since in the institution of the order of Beguines the way had been opened for societies and combinations among the laity, men began now to follow the example which had been set them by the other sex. St. Francis instituted the third rule, or order of Tertiaries, for such men as wished, without becoming ecclesiastics, to give themselves to a more ascetic mode of living than the circles of business or social life admitted of. The society of Tertiaries was a society which kept alive and gave expression to the ascetic spirit which was so rapidly increasing among the masses. It was the rule of this order to subsist entirely upon the charities of those to whom they appealed. From this circumstance they were designated by the epithet *Beguards*, *Beguins*, or *Beghards* in Germany, from the German *beggen*. Probably the epithet *Beguines*, as applied to the second order of St. Francis, the laywomen, was indicative of the same mendicant character, or as some writers say, it was meant to designate them as the "praying sisters." Neither of these names, however, was given at the time the orders were founded. The Beguines were at first called the *ordo dominarum pauperum*, and later, the order of St. Clara, while the Beghards were originally known as the *fratres penitentia*. Mosheim does not altogether agree with this history of the origin of the Beguines, for he says, in reference to the great debate which arose in the 17th century in the Netherlands concerning the origin of the Beguines, that the Beguines proved themselves by 3 historical documents to have as great an antiquity as about the middle of the 11th century, which would throw them back 150 years before the time of Francis of Assisi. The Beguines of the 11th century were probably, however, not known as Beguines at the time, for they were not originally mendicants; or even if they were thus known, since the title is only a nickname, they might not have had any relationship with the Beguines of the 17th or the

18th century.* Of one thing we are certain, that the epithet of Beghards or Beguines was bestowed in after time upon numerous sects and orders, which had nevertheless each a different chronological, and many of them a widely differing philosophical origin. The Beguins and Beguines of St. Francis, for so we may designate them in distinction from all others, were an outgrowth of the crusades, and cannot be understood if contemplated separately from these great features of ecclesiastical history. The Beguines differed from the nuns who took the veil, in that they still had control over their own property, and never were regarded at any stage of their career as having pledged themselves, without return or repentance, to a life of seclusion. They might, indeed, be the mothers of families, and many of them were the widows of those who had perished in the crusades. The same general principle characterized the Beguins or Beghards. They were in many instances the heads of families, while the real monks were required to abstain from marriage. Thus the orders of the Beguines and Beguins were instituted by St. Francis as a kind of middle rank between the priesthood and the laity, and were the result of a practical insight on his part into the wants which the spirit of the crusades had begotten. These sects or orders were both of them characterized by simple and temperate habits, nor do they ever appear to have been guilty of great personal offences. They were, however, destined to persecution. Unconnected with the church ecclesiastically, the powers of the church were not always engaged to protect them. Having become suspected of some heresies in doctrine, on account of a division in their ranks into practicals or orthodox and mystics, the mystic branch of the Beguines seem to have allied themselves with an order of the laity which had come to be known as the Brethren of the Free Spirit, and so exposed themselves to the censure of the church, which, in 1311, passed the famous act of the council of Vienna, known as the Clementina, the persecutions justified by which nearly ruined the mystic Beguines, and seriously injured both the orthodox sisterhood, and their brethren the Beguins. The Beguines of Holland seem to have avoided the suspicion of heresy, and were therefore less molested. But after 1250 the term Beghard was mainly synonymous with heretic in the ecclesiastical vocabulary. The more orthodox portion of the order joined by degrees either the Franciscans or the Dominicans, and wandered on the banks of the Rhine, crying piteously "Bread for God's sake." From 1311 to 1318, the Beguins were persecuted in Germany with too little regard to the division above mentioned, and to 1326 in Italy, at which several dates John XXII. took the orthodox branch of them under protection. After 1374, the Beghards are mostly merged in the Lollards. There are still Beguinagia, or establishments of the Beguines, in many cities of Belgium and Holland. There is one in

Brussels containing 1,000 inmates, who are governed by matrons.

BEGUM, in the East Indies, a title of honor bestowed upon princesses, and also upon the sultanas of seraglios. Two wealthy begums of Oude, in Hindostan, the wife and mother of Sujah Dowlah, are celebrated for the cruelties which they suffered from Warren Hastings. That resolute governor having looked in vain elsewhere for the treasures which he required, determined to extort it from these princesses. To this end their confidential servants were arrested and tortured, their zenanas or dwellings were surrounded by troops, and the treasure being still withheld, their apartments—sanctuaries respected in the east by governments which respect nothing else—were burst open by gangs of bailiffs. For the face of an eastern lady to be seen by strange men is an intolerable outrage, and to avoid so terrible an exposure the begums surrendered to the governor immense sums. Yet the cruelties did not cease, but many of the women and children were flung into gaol, distressed by torture or want of food, or driven to the extremity more dreaded than death of appearing publicly before the sepoya. Begums are generally of noble birth, and heirs to at least a portion of the wealth which they possess. Not unfrequently, however, they are quick-witted provincial girls, whose first successes were due to their beauty, and who after an adventurous career find themselves the survivors and heirs of their various husbands. Thus in the present century the famous begum Sumroo, who swayed the territory of Sirdhana, and whose annual revenue was £250,000, was by birth a Cashmerian, and by family a Georgian. At first a dancing girl, her lustrous eyes charmed a French officer, who with more enterprise than principle, served on all sides in the Indian wars, till by the last of his 8 masters he was rewarded with the territory of Sirdhana for his valuable services. The Cashmerian girl, whose maiden name was Zeb-al-Nissa (the ornament of the sex), accompanied this officer in his various expeditions, and was at length successful in alluring him into a marriage. Wearied at length of her lord and master, and exasperated at discovering that she was not the sole object of his love, she with cool perfidy beguiled him to his death in a well-varnished but horrible plot. Having seen his dead body she returned to her tent, buried alive the poor slave girl who had been the object of her husband's passion, and placing her bed over the grave, slept there until morning, lest any one more compassionate than herself should lend a saving hand to the victim. She now owned and ruled an immense estate till her death in 1886, at 90 years of age, living in splendor at her houses and gardens in Merat and Delhi, entertaining guests in the most magnificent style, admired even by the British for her taste and wit, though she usually sat in the cross-legged fashion, and seeming to exist principally upon tea and the smoke of tobacco, and to keep death at arm's length rather by the energy of

her mind than by any strength of the flesh. Eminent among the begums of India was Nour Jehan (the light of the world), the favorite wife of the emperor Shah Jehan, reputed to have been the most beautiful and accomplished woman of her age in Asia, and in reverence for whose illustrious beauty, virtues, and accomplishments, and to immortalize her name, that prince erected over her remains the magnificent mausoleum of Tajh Mahal, at Agra, one of the most superb specimens of architecture in the Orient. In its centre is a block of marble recording the name and graces of the begum, and extravagantly inlaid and bedecked with gems. The begum and light of the harem Nourmahal in the poem of Lalla Rookh, is well known, and Mr. Thackeray in his novel of the "Newcomes," makes a begum, or wealthy widow returned from India, figure in English society.

BEHAIM, or BEHEM, MARTIN, a German navigator and geographer, born at Nuremberg about 1459, died at Lisbon, July 29, 1506. After having at an early age pursued astronomical and mathematical studies, he went, in 1477, to Flanders, where, at Mecheln and at Antwerp, he engaged in manufacturing and selling cloths. The active commerce between Flanders and Portugal, and also the interest which he took in the great maritime undertakings of the Portuguese at this time, induced him, in 1480, to visit Lisbon, where he was well received at the court of King John II., and became a pupil of the learned John Müller, celebrated under the name of Regiomontanus. Here he was associated with Columbus, whose views of a western passage to India he is said by Herrera to have supported. In 1488 he was appointed a member of the commission for calculating an astrolabe and tables of declension; and in reward for his services, was made a knight of the order of Christ. In the following year he was cosmographer in the expedition of Diego Cam, who sailed along the western coast of Africa as far south as the mouth of the Congo. In 1486 he sailed to Fayal, one of the Azores, where he established a Flemish colony, and married the daughter of its governor. Here he remained till 1490, when he returned to Nuremberg, where he constructed a terrestrial globe, on which historical notices were written, and which is a valuable memorial of the discoveries and geographical knowledge of his time. Behaim subsequently returned to Fayal, and was, for a time, employed in diplomacy by the Portuguese government. It has been maintained, by some writers, that he visited America before Columbus; and an island which he places upon his globe far to the west of the Azores, has been thought to be evidence of this. But the existence of an island somewhere in the western waters was one of the current beliefs of the time, and it is probable that Behaim had no positive evidence in assigning it a locality.

BEHAM, HANS SEBALD, a painter and engraver, born at Nuremberg in 1500, died at

Frankfort in 1550, as notorious for his profligacy as he was eminent for his abilities as an artist. Bartsch enumerates 480 of his prints, of which 171 are wood-cuts. He excelled principally as an engraver upon copper, and in small prints, which are much in the style of those of Aldegrever.

BEHEADING, a mode of execution said to have been first employed by the Persians. According to Xenophon, it was looked upon in Greece as the least degrading capital punishment; and this classic theory of beheading was adopted by the British nobility, whose heads are cut off, while commoners are consigned to the less aristocratic gallows. St. John's head was cut off under the Roman régime in Judea. Caligula was a great amateur of executions, and employed a soldier, an eminent artist in the profession of beheading, who brought prisoners indiscriminately from their dungeons, in order to exercise his art upon their heads for the special delight of his imperial master. In the early ages, the blow was given with an axe; but as chivalry and good taste advanced, the sword was substituted, which remains to the present day a favorite instrument of beheading, as, for instance, in Bavaria, and some other parts of Germany. The Roman beheading, or *decollatio*, was a popular military punishment. The earl Waltheof was the first Englishman beheaded, by order of William the Conqueror, in 1075. In some English counties, beheading was not confined to the nobility; and under Edward II., it was customary in Cheshire to behead every common felon. The murderous instrument which, in the 18th century, cut off the heads of Italian noblemen, was called *mannaia*. In 1268, Conrad of Swabia was beheaded at Naples with a Welsh trap, or *Welsh Felle*, as the Germans call it. The instrument used for the first time in Germany in Zittau, in 1300, was called *dolabra*, which caused death by driving the instrument through the neck. In Scotch antiquity, the edged instrument used for beheading was called the maiden, introduced into England by the regent Morton, who became a victim of his own invention, as Dr. Guillotin was subsequently, in France, of his. The Duke of Montmorency was beheaded at Toulon in 1632. In the 18th century, the Dutch beheaded the convicted slaves in their colonies. The Scotch maiden does not differ much from the guillotine, and chops off the head in descending, with the exception that the oblique descent of the guillotine causes a more instantaneous death. In France, beheading was formerly confined to the nobility; but since the invention of the guillotine, it is the only mode of capital punishment.

BEHEMOTH, the beast described in the book of Job (xl. 15-24). There has been much variety of opinion as to what species of animal is referred to under this appellation. The elephant, the ox, and the crocodile have been suggested. The christian fathers variously supposed it to be a figurative representation of the devil, Antichrist, Sennacherib, and Pharaoh.

Dr. Adam Clarke believed it to be the mastodon, a kind of monster, whose prior existence on the earth is certified by huge fossil remains that have been discovered. Bochart, in a learned treatise, maintained that it was the hippopotamus, and this opinion has been adopted by most recent commentators. The rabbins teach that the behemoth is one of 2 marvellous ox-like animals, male and female, created by God at the beginning of the world. They add that the female has long been slain, and the flesh is preserved for a banquet to the faithful Israelites on the morn of the resurrection. The male still lives, and eats daily the foliage of 1,000 mountains, which grows again by night. He, too, will be slain to furnish a feast to the Messiah at his appearance.

BEHN, APHARA, or APHRA, a lady distinguished for her wit, beauty, and writings, in the reign of Charles II., born at Canterbury about 1640, died at London, April 16, 1689. She was very young when she sailed with her father, whose name was Johnson, for the province of Surinam, in South America, of which he was appointed lieutenant-general. Her father died on the passage, but the voyage being continued she resided for some time in Surinam, where she became intimately acquainted with the native prince Oroonoko, whom she admired as a type of heroism, and whose adventures and unhappy fate became the theme of one of her own novels, and of a tragedy by her friend Southern. Soon after her return to England she married Mr. Behn, a London merchant of Dutch extraction, and was introduced to Charles II., whom she delighted by her free and lively manners, and her entertaining account of the colony of Surinam. This monarch selected her as a political spy to collect intelligence and manage affairs for him on the continent during the Dutch war. She, therefore, took up her residence at Antwerp, and attracted numerous lovers and admirers, whom she managed so well that in 1666 she detected the project formed by Admirals De Witt and De Ruyter of burning the English ships in the Thames. She at once transmitted the intelligence to England, but the court of Charles refused to believe the fair envoy, though her report was speedily proved true by the event. Mortified that her skilful labors should have been so ill appreciated, she renounced politics, and revelled in the amusements of Antwerp. Embarking soon for England, she narrowly escaped death, being saved in a boat after the vessel had foundered, and from this time she devoted herself to authorship and to the gayest society of the capital. Her comely manners, brilliant eye, passionate character, and conversational talent, made her the delight of such men of wit and pleasure as Rochester, Etheridge, Southern, Crisp, and even of Dryden; and her works, consisting of 17 plays, some little novels, a variety of short poems, and numerous letters, of which those between a "Nobleman and his Sister-in-Law" (Lady Henrietta Berkeley and

Lord Grey) were the most famous, are remarkable for their grace and sprightliness, their lack of moral principle, and their entirely unbounded license. She wrote under the signature of "Astræa," and Pope alludes to her by that name. She died after a lingering sickness, and was buried in Westminster Abbey.

BEHR, WILHELM JOSEF, a German publicist, born at Sultzheim, Aug. 26, 1775, died at Bamberg, Aug. 1, 1851. He was professor of law at Würzburg, from 1799 to 1821, and became burgo-master there. In 1819 he represented the university at the Bavarian diet, and was a conspicuous member of the opposition. When he was chosen a second time to represent Würzburg, in 1831, the royal approbation was not granted him. This created great disturbance, and Behr himself having taken advantage of an opportunity to express his ideas, at Gaibach, May 27, 1832, an investigation was ordered, and Behr was dismissed from office. In 1836 he was condemned to imprisonment at Passau; but in 1839 was released, but kept under supervision of the police, and not until 1848 was he restored to full liberty. In 1848 he was elected to the Frankfurt parliament.

BEHRING, or BERING, VITUS, an arctic navigator, born in 1680, at Horens, Jutland, died Dec. 8, 1741. In his youth he made several voyages, in a subordinate capacity, to the East and West Indies. Peter the Great early enlisted his services for Russia. During the Swedish wars, he served in the Cronstadt fleet. He was made lieutenant in 1707, captain-lieutenant in 1710, captain some few years later; and captain commander in 1732. He previously made, in 1725, an expedition to the northern seas, to discover an overland passage to America. Having discovered, in 1728, what he considered to be the northeastern headland of the Asiatic continent, he returned the same year to his winter quarters, from which he made another expedition in the spring, the result of which was the discovery that Kamtschatka did not connect with Japan, according to the usual belief. In 1741 he took charge of an expedition with larger outfit, for purposes of general discovery. His first attempt was in the north. Soon, however, he was ordered by the government eastward, in which direction he proceeded for 44 days, making, from Avatcha, 50° of longitude, when he descried high mountains, which proved to be on the American side of the straits which now bear his name. Coasting for some time, probably on that part of the shore now called New Norfolk, the sickness of his crew compelled him to return. But on the island which bears his name, his vessel was wrecked, and he himself died there 85 days thereafter. His crew escaped in a boat constructed from the remains of the wreck.

BEHRING'S ISLAND. This island, named from its discoverer, Vitus Behring, lies off the east coast of the peninsula of Kamtschatka, nearly 2° distant from the cape. It is about 90 miles

long. It was uninhabited at the time of its discovery (1741), but has since been occupied by fur traders, and is a winter harbor for the trading vessels. The island is destitute of wood, and its soil is exceedingly barren. It abounds in springs of fresh water, and the furs of the arctic animals found here are very valuable, the principal of which are the ice-fox and sea-otter.—**BEHRING'S SEA**, that part of the Pacific ocean which lies immediately south of Behring straits, and between the continents of America and Asia. Its southern limit is the curvilinear line of islands, which, in connection with Behring's island, stretches quite across the Pacific from Alaska to Kamtchatka. It receives the Anadyr river in a gulf of the same name on the Asiatic side, has several islands, and is almost perpetually covered with fog. The current sets north through the strait. This sea is not so much obstructed with ice as Baffin's bay. It was first explored by Behring, in 1728.—**BEHRING'S STRAITS**. These straits connect the north Pacific and the Arctic oceans, and lie between the continents of Asia and America. Between East cape in Asia, and Cape Prince of Wales on the American side, the straits are only 86 miles wide. The depth of the straits is from 20 to 30 fathoms. They are commonly reckoned about 400 miles long. They were discovered by Vitus Behring in 1728, and from him take their name. Capt. Cook visited and described them in 1778, and later Capt. Beechey. About midway across, in the narrowest place, are 8 islands, called Diomedes. Opposite the southern opening of the straits stands the large island of St. Lawrence. A current sets through the straits from south to north. The adjacent coasts are uninhabited. The shores are bluff and deeply indented. The straits are frozen over every winter, and large quantities of ice are constantly blocked in north of the capes.

BEILAN, a town and pass of Syria, at its northern extremity, on the E. side of the gulf of Iskanderoon. The pass, between the mountains Rhossus and Amanus, is identical with the Amanian gates of antiquity. The town, which overlooks the pass, has some stone houses and several aqueducts. Here the Egyptians defeated the Turkish troops in 1832. Pop. 5,000.

BEIRA, or **BEYRA**, a central province of Portugal, between lat. 39° 30' and 41° 30' N., and long. 6° 40' and 9° 50' W.; bounded N. by Minho and Tras-os-Montes, E. by Spain, S. by Estremadura and Alentejo, and W. by the Atlantic; pop. in 1854, 1,155,275. The surface is very mountainous; the soil not fertile, but produces barley, wine, wheat, maize, olives, and fruits. The mountains furnish fine pasturage for sheep, and yield iron, marble, and coal. The province is divided into upper Beira, capital Viseu, and lower Beira, capital Castello Branco.

BEISAN (anciently called **BETHSHAN** and **SCYTHOPOLIS**), a village of Palestine, situated near the Jordan and about 55 miles north of

Jerusalem. It consists of 60 or 70 houses, and contains traces of the ancient city—the remains of walls on an acropolis, a Roman bridge, fragments of columns, ruins of houses, tombs, a theatre, &c.

BEIT, an Arabic word for house, often used as a name of a place, and corresponds to the Hebrew *beth*. Thus *Beit-al-haram* is "the edifice of the sanctuary," and is applied to the temple at Mecca. The village of Bethlehem is in Arabic *Beit-al-Lahm*, that is, the "house of bread."

BEIT-EL-FAKIH (house of a saint), an Arabian port on the Red sea. It is a large town with a population of about 8,000, and contains a mosque and a strong citadel. The houses are built of brick and clay, and roofed with date leaves. Caravans from all parts of Arabia, Syria, Persia, and Egypt, resort hither with Indian and British goods, spices and sugar, receiving in exchange coffee, wax, and various gums. Much of the commercial importance of the place is owing to an annual festival of 3 days which is held at the tomb of a sheik near by.

BEIT-EL-MA, a village in the pashalic of Aleppo, in Syria. It is supposed to occupy a portion of the site of ancient Daphne, and contains, beside some classic remains, the ruins of an early Christian church.

BEJA, a fertile district of Portugal, in the province of Alentejo; pop. in 1854, 124,890. It is extraordinarily rich in cereal productions, and the plain surrounding the city of the same name, is said to produce more than a million bushels of wheat annually, beside oil, wine, and fruit. Pop. of the city 6,000.

BEJA, or **BOJA**, a race of Africans to the north of Abyssinia, near the harbor of Suakim. The Arabs traded all along this coast, and seem to have intermarried with the Bejas, who were once of some importance, and joined in the wars of their northern neighbors. They are mentioned on the obelisk of Axum as the *Bougasita*.

BEJAPOOR, or **VIZIAPPOOR**, a city and former province of Hindostan, in the great territorial division called the Deccan; bounded N. by Aurungabad, E. by that province and Beeder, S. by Canara, W. by the Indian ocean. It contains about 60,000 square miles. The city is situated in lat. 16° 48' N., long. 75° 46' E. It was once of great size, and, according to the tradition of the natives, the largest city of the East. It was a fortress defended by outworks of great extent. Among the artillery with which the walls were mounted were guns of huge dimensions, 2 of which came into the English possession, one said to be capable of carrying a ball weighing 2,646 lbs. The modern city retains few traces of its former grandeur. There is a street 3 miles in length, several nunneries, and a Bramin temple of unknown antiquity. The province was formerly under Mahratta government, and, in 1818, the British took possession of it, expelling the Peishwa

Bajee Rao, the prime minister and ruler of the province. The dominions of the present Rajah of Sattara are part of the original province, held by him under the provisions of a treaty with the East India company, by which he is to govern it in such manner as not to conflict with the British interests, he, on his part, being secured in his government.

BEKE, CHARLES TILSTON, an English Abyssinian traveller, born October 10, 1800, in London. He quitted commerce to study law, and then devoted himself to historical, philological, and ethnographical investigations, and published *Origines Biblica*, or "Researches in Primeval History" (Lond. 1834). He next became impressed with the importance of Abyssinia in the history of civilization, and made propositions to the British government and several scientific institutions concerning its exploration. These offers were not accepted, but private individuals took the matter up, and he went out in the Abyssinian expedition, headed by Major Harris. He explored Godshem and the lands south. The results of his discoveries have been published in series, in the "Journal of the Geographical Society," London, and in a work of his own, entitled "Abyssinia" (Lond. 1846).

BEKES, or BEKESVAR, a Hungarian town, situated at the confluence of the White and Black Körös, in the county of the same name. It was formerly a fortified place, and the remains of an ancient castle are still to be seen in its vicinity. Bekes has considerable trade in cattle, corn, and honey. In 1854, the population of the town was 17,260, and of the county, 155,000.

BEKK, JOHANN BAPTIST, a statesman of Baden, born Oct. 29, 1797, at Tryberg, in the Black Forest, died at Bruchsal, March 22, 1855. He was a lawyer, entered the 2d chamber of Baden in 1831, was its president from 1842 to 1845, and, in 1846, was made prime minister. In the revolution of 1848, he was too moderate for one party and too liberal for the other, and went into retirement. In March, 1850, however, he again became president of the Baden chamber, and after his death a monument was erected to his memory at Bruchsal.

BEKKER, ELIZABETH, an elegant Dutch writer, was born in Flushing, July 24, 1738, and died at the Hague, Nov. 25, 1804. Many of her works are esteemed among the Dutch classics, especially her romance *Historie van Wilhelm Loewend*. In some of her more important works she was aided by her friend Agatha Deken, who died just 9 days after her.

BEKKER, IMMANUEL, a German philologist, was born in 1785 at Berlin, and was a pupil of the celebrated Wolf at Halle, by whom he was designated as the only person able to continue the researches he had begun. When the university at Berlin was established, he went thither, and passed 2 years in examining the manuscripts in the library. In 1815 he was made a member of the academy of sciences, and, in 1817, was sent to pursue his researches

in Rome and the Italian convents. He went, in 1820, to Oxford and Cambridge, and subsequently published his magnificent edition of all the Attic orators, with the works of Photius and some of the Greek grammarians. He also published the works of many of the Alexandrine historians, among them those of the princess Anna Comnena, and several volumes of Scholia on the Iliad and Aristotle, notes on Tacitus, and other classical works.

BEL, MATYAS, a Hungarian historian, born at Orsova in 1684, and died in 1749. He was distinguished as a theologian and historian, and became rector of the Protestant schools at Neusohl. He wrote on the history of Hungary alone, and achieved much distinction. His writings are valuable even now.

BELA, BELAH, BEILA, or BETLAH, capital of the province of Loos, or Lus, in Beloochistan. It contains the fortified palace of the chief of the province, and a mosque, but has no other substantial buildings. There are about 800 houses, of mud; pop. about 5,000.

BELA, the name of several Hungarian kings of the lineage of Arpad.—BELA I., son of Ladislas, reigned in the 11th century; was twice obliged to escape to Poland, on account of domestic dissensions occasioned by his brothers. In 1061, he returned, supported partly by Poles, partly by Magyars, and succeeded in seizing the throne. He energetically subdued the remains of paganism and strengthened the royal power, but his reign, lasting only 2 years, was too short to carry out all the reforms which Magyar annalists ascribe to him.—BELA II., a drunkard, reigned 10 years, from 1181 to 1141. In his youth he was blinded by his own uncle.—BELA III. reigned in the last quarter of the 12th century, and died in 1196. He warred successfully against the Poles, Austrians, and Venetians, and reconquered from the latter some cities in Dalmatia. He was married to a sister of Philip Augustus, king of France.—BELA IV. reigned for 35 years, from 1235 to 1270. He was crowned in childhood, and was son of Andras II., who gave to the nobility the golden bull or charter, establishing their privileges. The greater part of his reign was stormy; the nobility rose and obliged him to fly to Austria, and thus external and internal war devastated Hungary, which was then likewise invaded by the Tartars, in pursuit of the Polowzy and the Kumans, admitted into Hungary by Bela. Their descendants are found in Central Hungary. He finally overpowered his enemies, was victorious over Frederic II., archduke of Austria, who behaved treacherously toward him during his misfortunes, and succeeded in curbing the encroachments of the clergy. His last days were embittered by the revolt against him of his own son Stephan.

BELABRE, a town in the department of the Indre, France. The sieur de Flavi, whose order to close the gates of Compiègne led to the capture of Joan of Arc, was strangled in

the old castle there. Pop. of the commune in 1886, 2,217.

BELAIA, or **BIELAJA**, a Russian river rises in the Ural mountains, in the government of Orenburg, flows S. E. for 100 miles, then N. 100 miles; then turns N. E. and joins the Kama river. Its entire length is 550 miles; navigable about 240.

BELASPOOR, capital of the rajahship of Cahlora, north Hindostan, situated on the Sutlej; pop. about 15,000.—In the presidency of Bengal is another town of the same name.

BELBEC, or **KABARTA**, a small river of the Crimea. It rises in the mountains to the N. of Aloopka, and empties into the Black sea, on the W. side of the peninsula, to the N. of Sebastopol, and S. of the mouth of the Katcha. The valley of the Belbet is agreeable and fertile, and covered with vineyards which produce fine grapes, from which the Tartars prepare a poor wine. The Anglo-French army, Sept. 24, 1854, encamped upon the banks of the Belbec, 4 days after the battle of the Alma.

BELCHER, **SIR EDWARD**, grandson of Chief-justice Belcher, of Nova Scotia, a British naval officer and hydrographer, born in 1799, entered the navy at an early age, and, after having taken part as midshipman in the defence of Gaeta and the battle of Algiers, he was in 1819 appointed to the Myrmidon sloop, destined for the African station. In 1825 he became assistant-surveyor to the Behring's straits discovery expedition under Capt. Beechey in the Blossom. In 1829 he was promoted to the rank of commander, and served on the coast of Africa, and of Portugal, rendering on the latter occasion valuable services to the British residents by protecting their property during the political troubles in Portugal. Subsequently he was engaged for a number of years in a voyage round the world in the surveying-vessel, Sulphur. In 1841 we find him in the Chinese waters, exploring the inlets of the Canton river, and materially assisting in securing the triumph of the British army. In acknowledgment of these services, he was knighted and appointed post-captain. Afterward he was employed on board of the Samarang, on surveying service in the East Indies, and was severely wounded while assisting the rajah of Sarawak, Sir James Brooke, in his efforts to subdue the pirates of Borneo. From 1852 to 1854 he commanded the expedition in search of Sir John Franklin. On his return to England, he was tried before a court-martial for voluntarily abandoning the ships. The case against him, however, was not legally supported, he was acquitted, and his sword returned to him, but while some of the other officers were commended, his name was passed over in significant silence. Sir Edward has written books on his various surveying expeditions, and a treatise on practical surveying. His best known work is his "Narrative," giving an interesting account of his voyage round the world.

BELCHER, **JONATHAN**, governor of Mas-

sachusetts and New Jersey, born in Jan. 1681, died in 1757. He graduated at Harvard college in 1699, visited Europe and made acquaintance with the princess Sophia and her son, afterward George II.; returned to Boston, and lived there as a merchant. He was chosen a member of the council, and in 1729, went as agent of the colony to England. At the death of Gov. Burnet in 1780, he was appointed to the government of Massachusetts and New Hampshire, which station he held 11 years, and was then superseded. Repairing to England, he obtained a victory over his opponents, and received the government of New Jersey, where he arrived in 1747, and where he spent the remainder of his life. He enlarged the charter of Princeton college, and was its chief patron and benefactor.—**JONATHAN**, chief justice of Nova Scotia, second son of the preceding, died at Halifax, March, 1767, graduated at Harvard college in 1728, studied law at the Temple in London, and was one of the first settlers of Chibucto, afterward called Halifax. In 1760 he was appointed lieutenant-governor, and in 1761 chief justice.

BELCHER, **TOM**, an English pugilist, born at Bristol in 1788, died at Peckham, Dec. 9, 1854. He was the hero of 12 prize fights, in 8 of which he was the conqueror, in 8 he was defeated, and the 12th was a drawn battle. He was one of the 18 pugilists selected to act as pages at the coronation of George IV., to protect the access to Westminster abbey.

BELCHERTOWN, a village in the eastern part of Hampshire county, Mass., was originally granted to Gov. Belcher and others, and named from him. It contains a classical school, and is known for its manufactories of light wagons. Pop. in 1855, 2,698.

BELCHITE, a Spanish town, 23 miles S. S. E. of Saragossa, noted as the scene of a victory gained June 18, 1809, by the French, under Suchet, over the Spanish forces under Blake. Belchite has some manufactories of woollens. Pop. 2,655.

BELED-EL-JEREED, or **BLD-EL-JEREED**, the Bilidulgerid of old maps, "the land of dates," a district of the Atlas chain, on the borders of the great Sahara. It has earned its name, not from its absolute, but its comparative fertility, the date palms being dear to every Arab.

BELEM (properly **BETHLEHEM**), formerly a market town, now a suburb of Lisbon, on the Tagus, S. of the city. It derives its name from the church of Our Lady of Bethlehem, built here by King Emanuel in 1499, on the return of Vasco da Gama from his expedition to India around the Cape of Good Hope. Belem contains a Gothic church, in which is the tomb of the royal family of Portugal. It has also an old fortress, called *Torre de Belem*, which rises from the bank of the Tagus, and with its batteries commands that river. This quarter of the city contains a royal palace and the residences of many persons of note.—Also a city of Brazil. See **PARA**.

BELEMNITES (Gr. *βέλεμνον*, a dart, or arrow), a class of extinct molluscous animals, belonging to the same division as ammonites, termed *cephalopodous*, from the organs of motion being arranged around the head. The fossil remains of the animal are met with in the rocks of the upper secondary, both in this country and other parts of the world; they are particularly abundant in the strata of the green sand formation in New Jersey. The part preserved, often detached from the loose strata, is a pointed cone sometimes 8 inches long, of brown color and stony material, resembling in shape the head of a dart or javelin, whence their name. The larger end is hollow, the cavity being of similar shape to that of the whole specimen. Few fossil shells have attracted so much interest as these simple-looking, though still obscure, belemnites. They are found by millions in the formations to which they belong; and from 80 to 90 species of them have been recognized. They early attracted the attention of scientific men as well as of the common people; and it appears from the memoir of M. de Blainville, that no less than 91 authors, whose names he gives, beginning with Theophrastus, have written on this subject. The ancient inhabitants of Asia Minor are represented by some writers to have designated these fossils by the term *dactyli Idai*, fingers of Mount Ida, which, however, according to other learned authorities, was very differently applied, some describing these unknown *Dactyli* as divine persons worthy of worship, as having nursed and brought up the god Jupiter; and others, as Sophocles, making them to be the inventors of the manufacture of iron. But whatever truth there may be in these representations, the term certainly finds a very proper application in these finger-shaped fossils, and the ancients, if they so used it, displayed a better taste in their selection of a name than the moderns, who call them thunder stones, devil's fingers, and spectre candles. By the researches of Dr. Buckland and Prof. Agassiz, the true nature of the belemnites has been fully established. The hollow pointed body is composed of carbonate of lime, part of which was the original fibrous shell, and the remainder introduced by infiltration. Thus the fossil became crystalline and nearly solid. The cavity was the receptacle of the animal, but as in the genera *bulia* and *sepia*, and the coralline zoophytes, it by no means covered the fleshy portions; these, on the contrary, extended outside of the shell, and enclosed it, very much as a skeleton is enclosed and covered with the softer portions of the body. Within this cavity was the apparatus of the air chambers and siphon, common also to the ammonite, nautilus, and other chambered shells, by means of which the animal could rise or sink at will. But the belemnites also were provided with the ink-bag apparatus of the modern *sepia*; an important protection for their soft bodies, unguarded as they were by any outer shell. These ink-bags were noticed in a communica-

tion by Dr. Buckland to the geological society of London in 1829, as having been found by him in a fossil state, and which he supposed, from comparison with known molluscous animals that were furnished with them, must have belonged to cephalopods connected with belemnites. Subsequently, Prof. Agassiz met with specimens retaining the ink-bag within the cavity; and the fact being thus established, the name *belemnosepia* was thereupon given to the family in the class of cephalopods comprising all the species of belemnites. From the immense numbers of these animals, and also of the still more abundant varieties of ammonites, which flourished during the periods of the formation of the oolite and cretaceous groups, Dr. Buckland is led to infer that these extinct families filled a larger space, and performed more important functions among the inhabitants of the ancient seas, than are assigned to their few living representatives in our modern oceans; and in the retention through long epochs of time of so delicate an apparatus as that of the air-chamber and siphon, continued through successive species, and given to the nautilus of the present period, he sees the uniform and constant agency of a watchful and controlling intelligence.

BELESTA, a town and commune of France, department of Ariège, 17 miles E. S. E. of Foix; pop. 2,700. Its claim to notice rests mainly upon the intermitting spring of Fontestorbe. This spring rises in a natural grotto or cavern, and is so copious as to form the principal part of the river Lers, a feeder of the Garonne. The stream which flows from the cavern is 18 or 20 feet wide, and a foot or more deep, and runs very rapidly, yet in the summer and autumn, and whenever there is a drought, it becomes intermittent. The intermission takes place at equal intervals twice in the 24 hours.

BELFAST, a town in Waldo county, state of Maine, situated on a broad bay of the same name, on the west side of the Penobscot river, 80 miles from the ocean. Castine, 9 miles distant, occupies the opposite side of the bay. It was incorporated in 1778, and first settled in 1785. The harbor is deep and spacious, and always open; so that it is the winter port of the Penobscot. The Passagassassawakeag, a small river, empties into the Penobscot at this point, and furnishes a limited water power, which is used in the manufacture of lumber. There is considerable ship building and commerce, the vessels built in 1854 amounting to over 12,000 tons. The schools are excellent, and there is a well-endowed academy. The churches are handsome specimens of architecture; and the public buildings, the court house, custom house, are neat and substantial. Lines of steamboats connect with Bangor, Portland, and Boston. A company has been incorporated here with a charter for a railroad to Quebec, *via* Moosehead Lake. Three weekly newspapers are published here, and there are 2 banks. Pop. in 1810, 1,959; 1820, 2,026; 1830, 3,077; 1840, 4,186; 1850, 5,051; 1857, about 6,000.

BELFAST, a seaport town and parliamentary borough of Ireland, county of Antrim, 88 miles N. N. E. of Dublin; pop. in 1841, 75,808; in 1851, 99,660. It is on the Lagan, near its embouchure in Belfast bay. The site of the greater part of the town is low and flat, having been reclaimed from the marshy banks of the Lagan. The river is 250 yards wide, and was formerly crossed by a bridge of 21 arches, erected in 1682. In 1840, this was replaced by an elegant stone bridge of 5 arches, each of 50 feet span. The houses of the town are mostly of brick. The streets are regular and spacious, macadamized, and well lighted; and the enterprise and activity of the inhabitants, particularly the mercantile class, have given Belfast the reputation of being the first commercial town in Ireland. It has numerous places of worship. At the head of its educational institutions is the queen's college, built of brick and stone, at an expense of upward of £25,000, and opened in 1849. For the maintenance of the institution, £7,000 a year is allowed. There are, beside, the royal academical institution, founded in 1810; the Belfast academy, the Lancasterian school, and numerous national schools and private seminaries. Belfast has many charitable and benevolent institutions; a natural history society; a royal botanical and horticultural society; a society for the promotion of knowledge; a teachers' association; and a mechanics' institute. It is the great depot of the linen trade of the north of Ireland, and is also the chief seat of manufactures of cotton and linen, which furnish work to upward of 1,200 people. There are, also, distilleries, breweries, flour mills, founderies, tan-yards, vitriol works, a felt manufactory, saw mills, extensive ship and rope yards. Steamers ply regularly between Belfast and London, Liverpool, Fleetwood, Carlisle, Whitehaven, Glasgow, Greenock, Stranraer, Androssan, and Dublin. In 1853, 5,711 vessels (768,500 tons) entered the port. Belfast is a comparatively modern town. It was erected into a municipality and parliamentary borough early in the 17th century. Three railways diverge from it: N. W., the Ballymena and Carrickfergus railway; N. E., the County Down, and S. W., the Ulster railway, in connection with a line to Dublin.

BELGÆ, one of the 3 peoples who divided the possession of the whole of Gaul among them, at the time of its invasion and conquest by Julius Cæsar. The other 2 were the Celts and Aquitanians, the former possessing the middle of France, from the British channel and the Seine and Marne to the bay of Biscay and the river Garonne, which divided them from the Aquitani. The Belgæ occupied, therefore, nearly the country which constitutes, at present, the kingdoms of Belgium and Holland. It is not a settled point among ethnologists how far the Belgæ and Celts of Gaul were of different or kindred races; nor at what time, whether previous or subsequent to this period, the intermigrations with Britain occurred, which

had as their result the establishment of a Cambro-Briton, rather than a Celtic population, on the southern shore of the channel, from the mouth of the Seine to Douarnenez bay; nor is it well ascertained whether the Celts of Gaul were analogous to, or identical with—as their name would seem to indicate—the Celtic Gaël of the highlands of Scotland; or with the Erse Celts of Ireland; or, lastly, with the Cambro Celts of southern and western England. It is assumed, however, from many considerations, that the Belgæ had at least a mixture of Teutonic blood, if they were not Teutons; and this the obstinacy and doggedness of their characters, and the absence of that nervous and irritable mobility, both of intellect and temper, which Cæsar especially ascribes to the Celtic Gauls of his day, and which continues to the present hour to be a characteristic of the purely Celtic races, seems to give reason for accepting as truth.

BELGAUM, a town in the presidency of Bombay, British India, and the head-quarters of the southern division of the Bombay army. Its site is elevated and healthy, and it is strongly fortified. The British captured this place in 1818, after a long and vigorous siege. Pop. about 8,000.

BELGIOJOSO, a town of Lombardy, northern Italy, containing a fine castle belonging to the princes of Belgiojoso. Francis I. passed the night in the castle after his defeat at Pavia, Feb. 24, 1525. Pop. of the town, 8,000.

BELGIOJOSO, **CRISTINA TRIVULZIO**, princess of, born in Milan, June 28, 1808, of the illustrious family of the Trivulzios, which had been Guelphic for centuries, always standing for the political liberty and national independence of Italy. Her education was directed by the celebrated Manzoni; and thus by culture, as well as under hereditary tradition, her mind was developed in the love of freedom and of her country. In the year 1824, she was married to the prince Emiglio di Belgiojoso, a scion of the house of Este. This union did not prove happy for the princess. Some time after the marriage, she resided successively in Florence, Naples, and Rome. The French revolution of 1830 found her at Geneva. Shortly afterward a movement took place in Romagna, and one was preparing in Lombardy, when the princess went to Paris to ascertain the intentions of the French cabinet and of Louis Philippe. She met with a cordial reception at the capital, and her saloons were at once filled with the most eminent political and scientific men. Lafayette was an intimate, confidential, and daily visitor. The strong preventive measures of Austria, however, left to the patriots of Lombardy no hope of a successful rising, and the suspected chiefs avoided, by a seasonable escape, the dungeons of Spielberg, Carinthia, and Hungary. Count Appony, the Austrian ambassador at the court of the Tuilleries, intimated to the princess that she must either return to Milan, or that her immense estates

would be put under sequestration, and finally confiscated. She did not hesitate a moment; in one day she dismissed her household and carriages, abandoned the luxuries of a palace, and took a small apartment several stories high. Here she was not deserted by French society; savants, statesmen, artists, paid her even more court in those mean lodgings than in her former splendor. It was suggested that she might profit by her varied talents. Being skilled in drawing, she undertook to make the likenesses of the prominent men of all parties in the chamber of deputies, of whom M. Bichon and others were to write biographies. Several drawings were thus made, but a severe illness interrupted the undertaking. During these years of honorable poverty the princess attended the lectures of the college of France, of the Sorbonne, of the reformer Buchez, and many others. No new ideas or tendency escaped her attention, and she became familiar with the whole philosophical and social movement of that epoch. Her small parlor served as a lecture room for savants and thinkers, among them the original German Hoëne Wronsky, and the celebrated Italian, Orrioli. In the course of the year 1834, the Austrian government, yielding to the entreaties of the mother of the princess, who lived at Milan, somewhat mitigated its severity, and allowed a small portion of her previous income of about \$140,000 a year to reach her. Some time afterward, through the interference of her friends, and principally through that of Mignet, the celebrated historian, a staunch supporter and favorite of Louis Philippe, and that of Marshal Sebastiani, Louis Philippe obtained from Prince Metternich the restoration of her fortune. About the same time the Saint Simonians, then led by Enfantin, Michel Chevalier, and Duvergier, elected her as the representative of the living law in the name of woman made socially equal with man in the new religion which they were then preaching, but she declined the honor. Restored to her estates, the princess devoted her time, income, and even her capital, to ameliorating the condition of her Italian peasantry, establishing numerous elementary schools and asylums for children, endowing marriageable girls, and organizing regular distributions of food among the poor. Always prompt to alleviate human suffering, when Augustin Thierry lost his wife, who was his reader, the princess undertook to become the amanuensis of the great historian. Some writings now appeared under her name. They aimed at a catholic philosophy in imitation of the Abbé Bautin, with a strong tinge of the Italian spirit. In 1847, she went to Italy, then fermenting with the reforms of Pius IX. She visited Geneva, Florence, Rome, Naples, and took up her residence in Milan. When Milan and Lombardy rose, she proffered her whole fortune to the patriotic cause, and at her own cost equipped several hundreds of volunteers, but her energetic counsels were not followed. When fate de-

cided against Italy on the plains of Custoza, and Milan surrendered to the enemy, the princess retired to Rome. During the siege by the French army, she animated by her fervor the defenders of the city. She presided over the hospitals, and in company with the American, Margaret Fuller, devoted night and day to assuaging the sufferings of the wounded. On the fall of Rome, when the revolutionists were sent into exile, the princess shared their lot and went to Malta, whose Irish commander refused them a landing. They then went to Athens, the heroic woman sharing the common sufferings and dividing her scanty purse with her companions. From Athens she went to Constantinople, and there earned a humble livelihood by corresponding with American and European journals, her fortune having once more been confiscated. Finally, she resided several years in Asia Minor, under the special protection of the sultan, who gave her a grant of land near Nicomedia. After travelling in Syria, she was on her return to Constantinople, when she was murderously attacked by one of her servants. But the wound was not fatal. After her recovery, she returned to Europe and arrived at Paris. In 1855 her fortune was restored to her by the Austrian government; but she still resides at the French capital. Though educated in all the refinements of wealth and luxury, she has twice deliberately sacrificed her fortune to her convictions, and deliberately chosen poverty and exile. The versatility of her intellectual powers is remarkable. She has been able to learn and comprehend the most various and opposite sciences. She mastered mathematics, in which Arago was her teacher, and solved the highest problems with the same facility as song and music. She studied and mastered the Chinese. Her manners are marked by that graceful ease and simplicity peculiar to Italian women, with a modesty of mind peculiar to herself, and without any disposition to make a show of her superior acquirements. A work illustrative of Asiatic life, by the princess Belgiojoso, has recently been published in Paris. Her husband, who was one of the most famous amateurs of music in Europe, and remarkable for his handsome person, died at Milan at the beginning of 1858.

BELGIUM (Fr. *La Belgique*, Ger. *Belgien*), a kingdom of Europe, situated between the north-western part of France and Holland, Germany, and the North sea, and extending from 49° 31' to 51° 27' of N. lat., and from 2° 37' to 6° of E. long.; area, 2,942,574 hectares, equal to about 7,273,612 acres; pop. in 1816, rather above 3,000,000; in 1832, 4,064,285; in 1849, 4,859,090; in 1856, 4,530,228. Its greatest length from S. E. to N. W. is 173 English miles, and its greatest breadth, from the most northern part of Antwerp to the most southern part of Hainaut, is 112 miles. This area and population are distributed in 9 provinces, as follows:

	Area in acres.	Culti- vated.	Pop., Jan. 1, 1848.	Pop., Jan. 1, 1856.
Antwerp.....	699,778	394,792	413,824	484,485
Brabant.....	810,968	671,504	711,882	748,840
Flanders, W.....	798,916	669,219	626,847	624,912
Flanders, E.....	740,474	621,701	781,143	776,960
Hainaut.....	919,346	723,997	723,539	769,841
Liège.....	714,618	518,535	460,663	503,654
Limburg.....	596,048	381,183	185,621	191,708
Luxembourg.....	1,091,009	371,636	187,978	193,753
Namur.....	904,465	447,826	265,143	286,075
	7,375,612	4,800,393	4,350,090	4,550,323

The chief city of Belgium is Brussels, pop. in 1856, 150,000. The other important cities are Antwerp, pop. 79,000, Bruges, pop. 49,600, Ghent, pop. 115,296, Liège, pop. 80,245, Namur, pop. 23,500, and Malines, pop. 23,800. The surface of Belgium is generally level. In the east there are some high and well-wooded lands, connected with the Vosges mountains. Near Malmédy there is also a wild tract of elevated country of small extent, the highest elevation not exceeding 2,800 feet. Between the Meuse and the Scheldt there is another ridge.—The rivers of Belgium are the Meuse, the Scheldt, the Ourthe, and the Sambre. The Meuse runs part of its course only in Belgium, rising in France and passing through the provinces of Namur and Liège. It is navigable throughout its Belgian course. The Scheldt rises in France, enters Belgium in the province of Hainaut, and runs across the Belgian territory, passing into Holland below Antwerp. It is navigable throughout Belgium, but the sand banks at its mouth interfere with its navigation, and the policy of the Dutch government not encouraging a removal of them, the commerce of Antwerp suffers materially. The Ourthe rises in the Ardennes, and falls into the Meuse at Liège. The Sambre flows from France into Belgium, and falls into the Meuse at Namur.—The northern part of Belgium is of tertiary formation. In the south-eastern provinces the lower formations are red sandstone and limestone, resting upon granite, quartz, and slate. Fossil animals are very numerous; the limestone caverns through which the river Lesse has made its way are remarkable natural curiosities. E. and W. Flanders are principally sand.—After England, Belgium yields more fuel than any other country in Europe, the coal-fields producing in 1855 8,500,000 of tons (representing a value of nearly \$20,000,000), of which $\frac{1}{2}$ are consumed in the country, and the rest exported to France and Holland. The production of iron is also large, amounting in 1855 to 750,000 tons. The best iron is found in the country between the Sambre and the Meuse. Lead, manganese, and other minerals, especially zinc, are found in various parts of the country. The most celebrated zinc mines are between Liège and Aix la Chapelle. The country abounds at the same time in building, paving, and lime stones, roofing slate, and marble. The black marble of Dissant is renowned for its beauty. The min-

eral wealth of Belgium is, next to agriculture, the most important source of her national prosperity. The most celebrated mineral springs of Belgium are at the famous watering place Spa, which is situated near the frontier of Rhenish Prussia. Another popular watering place of Belgium is Ostend, to which many visitors resort for the purpose of bathing in the sea.—The canals, though numerous, are not equal in length to those of Holland, being about 300 miles. The greatest of these is the Brussels canal, supplied by the river Lenna, which was opened in 1550. Ghent is connected with the sea by a canal opening into the E. Scheldt, in some measure accounting for the Dutch control of the mouth of that river. It admits vessels drawing 18 feet. The railways of Belgium were the earliest of continental Europe, and rapidly followed those of England, which they have surpassed in unity of design and economy of construction. Soon after King Leopold's accession, he took measures to establish railways. The country was surveyed and levelled by government engineers, the lines decided on, and the permanent way was constructed at the expense of the country. Mechlin, on account of superior engineering advantages, was made the centre of the system. The policy of low fares and good accommodation was adopted, and the result, if not one of success as a commercial speculation, has answered the aims of a wise government.—There are nearly 550 miles of railway now open, paying $8\frac{1}{2}$ per cent. interest on their outlay. The receipts of the public treasury from railways in 1856 were 22,780,000 francs, and in 1857, 23,780,000 francs. The total cost of the earth works and permanent way has been \$33,268,961, raised in 5 national loans.—Electric telegraphs have been in operation since March 15, 1851, and belong to the government.—The Roman Catholic religion is predominant in Belgium. The stipends of ministers of all denominations are derived from the state. The archbishop of Malines is the Catholic primate. There are government universities at Ghent and Liège, a Roman Catholic university at Louvain, and a free university at Brussels. There are superior public schools in most of the cities, beside the primary schools throughout the kingdom; and a great number of schools have been established for instruction in particular branches of industry—agricultural processes, chemistry, design.—The number of journals gradually rose from 84 in 1830 to about 200 in 1848, of which from 50 to 60 were published in the Flemish language and the rest chiefly in French. The abolition of the stamp tax in the latter year and the reduction of the rate of postage have given a further impetus to the circulation of newspapers, and their number has been continually increasing within the last 10 years. The *Indépendance Belge*, a liberal journal published at Brussels, and originally established in 1831, under the name of *Indépendant*, has the largest circula-

tion and about 9,000 subscribers. The *Observateur*, established at Brussels since 1835, is less conservative in its tone, and the other first-class journals in the liberal interest are the *Précurseur*, issued at Antwerp since 1835 (an important shipping and commercial paper), the *Journal de Liège*, published in the latter city (one of the oldest journals of Belgium, established during the Spanish and Austrian rule), the *Messenger de Gand*, the principal political journal of Ghent, the *Journal de Verviers*, *De Schelde*, the best Flemish journal of Antwerp, and the *Burgerweleyn*, an important Flemish organ, published at Bruges. The other political journals which enjoy the largest patronage, are the *Emancipation* of Brussels (in the interest of the so-called Catholic party), the *Journal de Bruxelles* (the official organ of the ultramontane party), the *Gazette de Liège*, the *Journal d'Anvers*, the *Conservateur*, and the *Standaard* (the latter in Flemish), published at Ghent, and the *Ami de l'ordre*, at Namur. The principal organs of the democratic party are the *Nation*, of Brussels, the *Tribune*, of Liège, and the *Reforme*, of Verviers. The *Etoile Belge* and the *Télégraphe* (the latter in existence since Sept. 1854), are anti-Bonapartist journals, published at Brussels. The *Nord*, which appeared within the last few years at Brussels, is a journal dedicated to the interests and policy of Russia. The organ of the government is the *Moniteur Belge*, in existence since 1831. The independent and general newspapers of largest circulation are the *Echo de Bruxelles* and the *Journal de Belgique*, both published at the capital, where also 2 satirical prints flourish, namely, the *Sancho* and the *Mephistopheles*. The principal historical magazine is the *Messenger des sciences historiques*, published at Ghent since 1833. The most eminent polemical periodicals are the *Revue catholique* (conducted by the professors of the university of Louvain), the *Journal historique et littéraire* (a rigidly orthodox publication, conducted with great ability by Kersten, of Liège), and the *Revue Trimestrielle*, progressive in its tendencies, which appeared at Brussels since 1854. The principal Flemish magazine is the *Taalverbond* of Antwerp. The principal religious papers for the Roman Catholic interests are, the *Précis historiques, littéraires et scientifiques*, in existence since 1852, and for the Protestants the *Gleaner missionnaire*, established in 1844, and the *Chrétien Belge et l'Union*, in existence since 1850. The principal organ of industrial enterprises is the *Bulletin de l'industrie*, of fine arts the *Renaissance*, of music the *Gazette musicale*. The principal periodical devoted to the cause of education is the *Moniteur de l'enseignement*, published at Tournai, while jurisprudence, medicine, and other sciences are equally represented by magazines, which all sprung up within the last 20 years. Literature and science are much indebted for their progress to the efforts of the various academies of sciences, of which the institu-

tion of Brussels is the most important, and to the encouragement of the government. Oudet, in the field of mathematics; Nothomb, de Gerlache, Gachard, Borgnet, and others, in the sphere of history; Conscience, the Flemish novelist, Bormans, Blommaert, &c., in the science of philology; Willems, the eminent Flemish scholar, in the same branch of knowledge; Bériot, Vieuxtemps, Fétis in music; Gallait, de Keyser, van Eyken, Verboekhoven, &c., in painting; Jehotte, Fraikin, &c., in statuary, and many other contemporaneous names in various other branches of literature, science, and art, attest the growth and intellectual activity of this young and prosperous country.—The agriculture of Belgium is not surpassed by that of any nation. The originally unfavorable soil has by generations of careful culture been raised to great productiveness. Large farms are rare, the subdivisions of the soil have been carried down to garden size, and less than $\frac{1}{3}$ of the whole area of the kingdom is unprofitable. Flax is an object of peculiar care in Belgium, and the Belgian system of cultivation is studied everywhere. E. and W. Flanders alone produce flax to the value of \$8,000,000 annually. The artificial grasses are also generally productive, while the production of root crops by artificial manure is matter of elaborate study and attention. Belgium is celebrated for its horses, of which it possesses nearly 800,000. Those of the Ardennes are excellent cavalry horses, and those of Namur are famous draught horses. The number of cattle exceeds 1,000,000, and of sheep 700,000. The government pays special attention to the improvement of horses and cattle.—In commercial pursuits and manufactures, Belgium has long enjoyed the highest reputation. But the fame of her linens and woven goods had somewhat deteriorated from their high estimation in the 14th century, until the separation from Holland. The lace of Brussels and Mechlin, the linens and damasks of Cambray and Liège, the woollens of Ypres, the cotton goods, carpets, and hosiery, compete with the productions of the French and English looms. The machine factory of Cockerill and Co., founded at Liège in 1816, is one of the greatest works of the kind in Europe. Liège has a cannon foundry, and is noted for its manufactories of fire-arms.—The foreign commerce of Belgium during its connection with Holland suffered for the sake of Amsterdam and Rotterdam, and judicious plans of internal improvement have since occupied the national attention. The entries at the Belgian ports, chiefly Antwerp and Ostend, in 1855, were 2,558 vessels, of 441,554 tons, and the clearances were 2,507 vessels, of 432,457 tons. The imports for the same year were 354,708,000, and the exports 375,231,000 francs. The imports from the United States to Dec. 1857, were \$1,950,698, and the exports to that country \$5,060,811. The revenue of Belgium for 1857 was 188,604,990 francs, and the expenditure 186,680,758.

The public debt was created by the assumption of 220,000,000 francs of the enormous debt of the kingdom of Netherlands at the time of the separation, and now consists of 635,946,647 francs, a large portion of which has been expended at home, as, for instance, in the railways. The military force of the kingdom, according to the law of June 8, 1853, consists on the war footing of 100,000 men, beside the national guard. The actual standing army in 1857 was, however, 78,718 men.—The history of Belgium as an independent state dates from 1830, at which time it was separated from the kingdom of the Netherlands. After the decay of the Roman empire a number of independent nobles established themselves in Belgium, among whom the counts of Flanders rose to historical distinction; for failure of male heirs their possessions devolved to the house of Burgundy, in 1385, which gradually extended its influence, by conquest or treaty, over the greater part of the Netherlands. On the death of Charles the Bold, his daughter Mary, the greatest heiress of Europe, married Maximilian, emperor of Germany, and in his successor Charles V. the rule of the Flemish provinces was joined to the crowns of Spain and Austria. Both Maximilian and Charles respected the freedom and rights of their industrious and stout-hearted Batavian and Belgian subjects, and were careful to make no encroachments. But Philip II., at once a fanatic and a despot, severely tried their patience, and his fiscal exactions, with the establishment of the inquisition, drove them to that famous revolt which ended in the independence of the United Provinces, and the confirmation of the yoke of Spain on the necks of the Belgians. From this period Belgium followed the fortunes of Spain. In 1598 Philip bestowed the Flemish provinces on his daughter Isabella and her husband Albert, during which period something was effected toward the settlement of the internal affairs of the province. On the death of Isabella without issue, Spain again assumed the government, and the Low Countries were for the next century the battle-field of Europe. The cities were taken and retaken, the territory cut up, and passed from one power to another by the treaties of Aix la Chapelle, Nimeguen, and Ryswick; and, as though these influences had not been sufficiently injurious to the country, the treaty of 1715 delivered over several of the fortresses of Belgium to her commercial rival Holland, in order to create a barrier against French ambition. Holland closed the Scheldt, and so diverted the trade of Antwerp, and in 1792 the rising commerce of Ostend was sacrificed to the Dutch. At the end of the war of succession the Low Countries passed, almost in their former integrity, to the house of Austria. The empress Maria Theresa appointed Charles, duke of Lorraine, her viceroy, and in his mild and equitable rule, the people enjoyed an interval of peace. Joseph II. shook off the bonds of the barrier treaty with the Dutch, and

compelled Holland to withdraw her army of occupation, but could not succeed in re-opening the navigation of the Scheldt. Joseph II. also addressed himself to the reform of existing abuses; but in Belgium, as in other parts of his empire, his precipitation placed a lever in the hands of those who opposed his plans, which they used successfully to excite popular discontent against his measures. The states were against him and refused to pay taxes. In 1788 the Catholic seminary of Louvain, which had been closed by the government, was reopened. This sign of weakness encouraged the discontented, who at once organized for measures of active resistance. The theories of freedom, and the schemes for a new organization of society, which were at that period rife in the French capital, spread to the Low Countries, and on Dec. 11, 1789, the discontent was made evident by a movement in Brussels against the garrison, which was forced to capitulate. Joseph and his successor Leopold made liberal offers for an adjustment of the differences and for the reestablishment of the constitution. But the liberal leaders refused all terms, and, rendered over-confident by their past success, stood out for an independent republic. Internal dissensions soon threw them into the power of the Austrians again, when Pichegru crossed the frontier under instructions from the directory, to assist the Belgians. The Austrians were rapidly driven back, and the Belgians found themselves incorporated into the French republic, their dream of independence dissipated, and eventually they became a part of the empire. On the abdication of Fontainebleau Belgium was put under the control of an Austrian governor, but on the final peace Prince William Frederic of Orange-Nassau received as the reward of his faithful adherence to the allied cause, the territory and title of king of the Netherlands. The inclinations and habits of the Belgians, which led them to a French alliance, were not consulted in this settlement; nevertheless a temperate and conciliating policy on the part of the Dutch would no doubt have smoothed away obstacles between parties whose ancient recollections might have prompted friendly relations. As it was, the differences which might have formed the strongest bonds of union in mutual support became the grounds of mutual aversion. The Dutch were engaged in commerce, the Flemings in agriculture and manufactures. The Belgians, from an uninterrupted intercourse not only during the republic and the empire, but since the days of Louis XIV., had adopted the French language, at least in the higher circles, and in all public proceedings. The Dutch were Protestant and Calvinist, the Belgians Catholic. The Dutch were only half as numerous in the new kingdom as the Belgians. The education and modes of thought of the Dutch were particularly staid and leaned to Puritanism. The Belgians in their free intercourse with France had acquired ideas and principles, which, in their liberalism and in-

dependence of authority and tradition, were the very opposite of Dutch precision and conservatism. Unfortunately the Dutch looked on the new territory as the spoils of victory. The Hague was henceforth the seat of government. The use of the French language in judicial and government proceedings was to be abolished; and although the ordinances for carrying out this arrangement were mitigated to meet objections, still the offensive order remained. In the states-general Holland with her 2,000,000 was to have a number of representatives equal to Belgium with her nearly 4,000,000 of people. Belgium had only a debt of 4,000,000 florins, Holland a debt of 1,200,000,000 florins. This was imposed on Belgian industry. The constitution which contained all these objectionable provisions was passed by an assembly in which the dissentient Belgian nobility were an actual majority, but the absent Belgians were reckoned as assenting, and thus the majority present was converted into a minority. The heart-burnings and ancient rivalry of the two countries were increased as well by the measures themselves as by the proceedings taken from year to year to carry them into effect. The flame, which might have died out from neglect, was kept alive by perpetual fanning. The opposition was composed of heterogeneous elements, French liberalists with Catholic ultramontanists. This divided party was permitted to fuse into a union which was designated "monstrous" by the king, but the mere fact ought to have been a warning. There was indeed but one sentiment in the Belgian opposition. They accorded upon the most irreconcilable questions, provided only that in such unnatural friendship they could display their enmity against the Dutch government, which in 1829 decided on energetic proceedings. In May, 1830, disregarding 640 petitions, they carried a new law of the press. Officials holding Belgian opinions were dismissed. M. de Potter, the head of the Belgian party, opened a subscription for all those who thus suffered for their principles. De Potter and his confidential friends, Tielemans, Bartels, and De Newes, were arraigned for sedition; the charge was proved by their private correspondence with each other. They were banished. The public mind was in a state of excitement, which was raised to its highest pitch of intensity by the revolution of July in Paris. At length on August 25, 1830, Auber's *Masaniello* (*La Muette de Portici*) was performed at the grand opera, at Brussels. The spirit-stirring airs moved the souls of those present, and the market-chorus and the revolutionary scene sent the electric shock vibrating through all hearts; the house was rapidly emptied, the streets resounded with tumultuous cries, and the first blow of Belgian independence was at once struck. The office of the *National* newspaper, the government organ, was at once attacked, the *matériel* destroyed, and the residence of its chief editor, Libry Bagnano, was the next point which shared the

same fate. The people now proceeded in their work; they divided themselves into parties, broke open the armorers' shops, attacked the houses of the Dutch ministers, and had possession of the town all night, gratifying their rage on the government offices and establishments. The troops were mustered, but nothing could be done until daybreak. They were then ordered out, without any combined plan; they fired upon the people. This only increased the popular exasperation. Barricades were formed, and outrages commenced on private property. The civic guard now turned out, took possession of the military posts and restored order. The news of the revolution in Brussels spread rapidly through the kingdom, and in all the principal cities the same scene was reenacted. On August 28, a congress of various citizens of distinction took place at the hotel de ville, in Brussels; they adopted an address to the king, which was altered by the deputies of Liège into a petition. They asked for reform of the system of government and dismissal of the unpopular ministers; trial by jury in criminal prosecutions and proceedings affecting the press. The king received the deputies at the Hague, and refused to pledge himself to any thing while under menaces of force, but promised an early consideration of the matter. This answer gave great dissatisfaction. Subsequently the crown prince was induced to visit Brussels, which he found almost impassable from the impromptu fortifications raised by the people. He held a conference with the leading men of the city, and appointed a committee for redress of grievances. The Liège deputies, however, boldly told the prince that nothing short of total separation from Holland would now pacify the people. The prince listening with commendable patience, the orator of the party advanced such cogent reasons that he promised to report the matter to the king, if on their part they would pledge themselves for the loyalty of the Belgians to the house of Orange. The compact was carried by acclamation. The prince dissolved the recently formed committee, and returned to the Hague. The king summoned here a states-general extraordinary, on Sept. 18. It was numerously attended. Matters were put in train, but the Dutch, with their accustomed phlegm, showed a dilatoriness which the impetuosity of some of the Belgian deputies attributed to intentional procrastination. Baron de Staffart proclaimed his convictions loudly on this head, and the committee of safety at Liège issued a proclamation in the name of the people. The government was deposed and a new one formed under the administration of De Potter and De Staffart. The king, on the requisition of some of the Dutch party, now sent troops to Brussels, and a proclamation was issued calling on the rebels to submit and to remove the tricolor. On Sept. 20, the streets of Brussels were rendered completely impassable. Prince Frederic advanced with 16,000 men, and on Sept. 28, attacked

the Porte de Saarbrück. After a battle of 6 hours the troops fought their way through the streets to the palace, and for 8 days there was an incessant engagement, during which the Dutch made themselves masters of the principal part of the city. But the men of Liège now put themselves in motion; reinforcements poured in, the insurgents recovered strength, and under the judicious advice of Col. Don Juan van Halen and Gen. Mellinet, Prince Frederic's position became hopeless. He ordered a retreat; Brussels was won; Mons, Ghent, Ypres, and all the other leading towns, at once declared in favor of total separation, and on Oct. 6, the Dutch garrison of Liège capitulated. Antwerp was now the only important place which remained in the hands of the Dutch, and even in that city their authority was rapidly crumbling away. Gen. Chassé had thrown himself into the citadel, and the authorities agreed on an armistice. But the insurgent forces repudiated the right of the magistrates to negotiate with the enemy, and summoned Chassé to surrender. He, however, only opened his guns on the quarter of the town in which the revolutionary troops lay, and did much harm to the city, beside destroying a vast quantity of valuable merchandise. A provisional government had been already formed in Brussels, consisting of Baron van Hoogvorst, Charles Rogier, Jolly, Count Felix de Merode, M. Gendebien, Van de Weyer, Potter, and some others. They appointed the various ministers, summoned a national congress, and settled the basis of a constitution which recognized the monarchical principle. Secretaries Northomb and Paul Devaur were directed to prepare a draft of a constitution in accordance with this basis. Prince Frederic meanwhile announced the independence of Belgium. It was too late. On Oct. 25 he quitted Antwerp, and 2 days afterward Gen. Chassé commenced a 2 days' bombardment of the town, by which wanton act the Dutch party crushed out all chance of a friendly settlement. On Nov. 10, the national congress was opened—the independence of Belgium proclaimed. The form of monarchical government was adhered to, but the exclusion of the house of Orange forever from the crown of Belgium, was carried by an overwhelming majority. King William now turned to the great powers who had given him Belgium and guaranteed his quiet enjoyment of his new dominion. At his request a congress was summoned in London, in which all the important parties were represented. The importance of this step, in reference to the settlement of Europe by the holy alliance and the congress of Vienna, can hardly be overstated. It opened the door for all future alterations in the balance of power, and nothing but the imminent danger of keeping open a dangerous outlet for disaffection could have induced the astute politicians of Europe to pass this great point. The conference at once ordered an armistice, and the retirement of the troops of both parties within their respective frontiers. On Jan. 20, 1831,

the independence of Belgium was acknowledged by the congress. William of Holland protested against this declaration, but as it was coupled with an apportionment of half the Dutch debt to Belgium, he ungraciously submitted. Belgium, on the other hand, protested against the debt, which entailed upon her the payment of 14,000,000 florins annually. The next question was a monarch. The crown was offered to the duke of Nemours, Louis Philippe's son, and declined, why we know not. This declension threw a degree of embarrassment over the proceedings of the conference, and there is ground for believing that the plan of dividing the territory like another Poland, among the strongest, was mooted. In the national congress, however, it was determined by a majority to appoint a regent in place of the provincial government, and Baron Surlet de Chokier was elected. He took the reins of government and named a ministry, which being composed of incongruous materials soon resigned, and another was appointed. The choice of the ministry and national congress now fell on Leopold of Saxe-Coburg, to whom, being found not unwilling, a formal offer of the crown was made, which he accepted. He held the balance between France and Germany, while his relationship to England as widower of the Princess Charlotte was enough to insure his independence of continental intrigues, yet not to implicate him too deeply with British politics. On July 21, 1831, he ascended the throne of Belgium. Scarcely had his reign commenced when Holland, in defiance of the armistice, sent an army across the frontier, and Leopold found himself engaged in war, with a kingdom all disorganized, an army hastily levied, and an unformed administration. Leopold asked aid from France, which was promptly afforded, and the duke of Orleans marched an army to Brussels, which compelled the Dutch forces to retreat across their frontier. William of Holland had not, however, given his consent to the new order of things in Belgium, seeing that as yet the question of the public debt was not satisfactorily disposed of. Accordingly, the conference determined on compelling Holland to evacuate the Belgian territory, and an Anglo-French army was despatched to drive the Dutch out of Antwerp, Fort Lillo, and Liefkenshoek. The siege of Antwerp began Nov. 19, 1832, and on the 24th Gen. Chassé capitulated. The other fortresses were, however, not evacuated, but Leopold declared himself satisfied to hold Limburg and Luxembourg against the strong places in question, and accordingly the French army retired. On Aug. 9, 1832, Leopold married the princess of Orleans, daughter of Louis Philippe. The new king soon found himself obliged to dissolve the chamber which had elected him, and to summon a second. The inextinguishable hostility of Holland kept up a state of great irritation in Belgium, which was not allayed, when, upon the surrender of Luxembourg to the Dutch, in pursuance of the treaty of 1831, the Luxembourgers protested loudly and

even raised a rebellion, petitioning King Leopold to maintain the integrity of the province. Notwithstanding the threatening aspect of affairs, Leopold skilfully conducted them to a peaceful issue. The events of France in 1848, naturally gave rise to a crisis of alarm and anxiety in Belgium. Leopold at once signified to the people his willingness to resign the constitutional trust he held, if such was their wish. This suggestion was not accepted. The legislature, however, proceeded to carry out the full measure of electoral reform contemplated by the constitution, and to abolish the newspaper duty. Some ultra French republicans attempted an irruption into Belgium, but they were seized at the railway station, disarmed by the Belgian troops, and sent back unhurt to the place from which they came. In the active contention for power between the liberals and the Roman Catholic party, various ministerial crises have occurred, which we cannot discuss more minutely.—The constitution of Belgium is a limited monarchy, with male succession, and in default of male issue the king may nominate his successor with consent of the chambers. The legislative body consists of a senate and house of representatives. The elective franchise is vested in citizens paying not less than 49 francs annually of direct taxes. The house of representatives consists of deputies, in the proportion of 1 to 40,000 of population. Citizenship is the sole qualification for representatives, and they are elected for 4 years (except in case of a dissolution), half retiring every 2 years. The senate has half the number of the house, elected by the citizens for 8 years, half retiring every 4 years. The senatorial qualification is citizenship, domiciliation, 40 years of age, and payment of direct taxes of at least 2,000 francs annually. The restriction created by this large proportion of taxes is enlarged by the admission of those citizens who pay the largest sums, so that the list shall always be kept up to the footing of at least one eligible person for every 6,000 inhabitants. The representatives receive pay at the rate of about 20 dollars per week. Senators receive no pay. Each house may originate laws, but money bills must originate with the representatives. The chambers assemble as of right on the second Tuesday in November. The king may dissolve the chambers, but the act of dissolution must contain a provision for convoking them again within 3 months. The number of electors in 1863, was 78,238. Titles of nobility are allowed by the constitution, but without particular privileges, all Belgians being equal in the eye of the law. Trial by jury in criminal and political charges, and offences of the press, are provided for. Taxes and the army contingent must be voted annually. The law is administered by local and provincial tribunals, with courts of appeal at Brussels, Ghent, and Liège.—Various pernicious influences have produced a vast amount of pauperism. In 1847, 232,428 persons had to be supported by the state in Flanders W., and 221,280 in Flanders E., to which pur-

pose \$500,000 were devoted. The following is the proportion of pauperism in the respective provinces alleviated by the government: Luxembourg, 1 in 69 inhabitants; Namur, 1 in 17; Antwerp, 1 in 16; Liège, 1 in 7; Limburg, 1 in 7; Hainaut, 1 in 6; Flanders E., 1 in 5; Brabant 1 in 4; Flanders W., 1 in 8. Since then the condition of the poor has been somewhat improved by the solicitude of the government to employ them in public works, by the establishment of agricultural colonies for the poor (after the plan of that of Van den Bosch), and by the general increase of commercial and manufacturing prosperity.

BELGOROD, or **BYELGOROD**, once the capital of a province, but now the chief town of a circle in the government of Koorsk in the S. E. part of European Russia; pop. 10,318.

BELGRADE, the largest and best built city of Servia, with a good harbor, on the right bank of the Danube, at its junction with the Save, 44 miles S. E. of Peterwardein; pop. 30,000. The citadel, occupied by a Turkish garrison, is on a small strip of land between the two rivers, behind which is the city. Its parts are the Turkish quarter, which slopes to the Danube, and the Servian quarter, which borders the Save, with a quay and rows of houses in modern style. Belgrade is gradually becoming modernized, churches are superseding mosques, new buildings are being constructed in the German fashions, but its streets are filthy and not lighted, and its public accommodations most comfortable. It produces arms, carpets, silk goods, outlery, and saddles. It is the entrepot of commerce between Turkey and Austria, and the seat of the principal authorities of Servia. Its fortifications are now rapidly decaying. Belgrade was long an object of contention between the Austrians and the Turks. It was unsuccessfully besieged by the latter in 1456; but was taken by them in 1523, and held until 1688, when it was retaken by the elector of Bavaria. Two years later it was retaken by the Turks. In 1717 it was besieged by Prince Eugene with an army of 90,000 men; after a desperate conflict the Turks were defeated, with a loss of 13,000 killed, 5,000 wounded, and 3,000 prisoners—the Austrians having only 3,000 killed and 4,500 wounded. In 1739 the Turks made another unsuccessful attempt to regain it, but subsequently came into possession of it by treaty, retaining it till 1789, when it was again taken by the Austrians, who, however, relinquished it to the Turks in 1791. It has since remained in their possession, except for a short time during the Servian insurrection in 1813.

BELGRAM, or **BALAGRAM**, a town of the kingdom of Oude, India, 75 miles N. W. of Lucknow. It is a very ancient place, and contains some of the finest specimens of Mogul architecture extant, but it is in a decaying state.

BELIAL is a compound Hebrew word, and is variously derived by Hebrew scholars. It is generally interpreted "a worthless fellow."

Some render it "idle fellow," others "one never to rise," or grow better, while the Talmudists translate it "without yoke" or restraint. It seems to be variously used in the Scriptures. In Deut. xiii. 13, it is applied to persons guilty of idolatry. Hopni and Phinehas, the sons of Eli, are called "sons of Belial." Hannah, in answer to the accusation of drunkenness made by Eli, who noticed her strange conduct in the temple, says, "Count not thy handmaid a daughter of Belial." Those who opposed the inauguration of Saul as king of Israel are, in the book of Samuel, called sons of Belial. Nabal, in his opposition to David, is called a man of Belial, and so also is Sheba, engaged in a similar cause; while Shimei, in his hatred of David because he had superseded the house of Saul on the throne of Israel, calls him a son of Belial; and Abijah, the partisan and successor of Rehoboam, applies the same epithet to the followers of Jeroboam, in the division of the government of Israel. In the New Testament the word is used but once. Paul asks the Corinthians, "What concord hath Christ with Belial?" The scriptural use of the term in the Old Testament seems generally to be to designate a wicked and unprincipled character. So far as the passage in the New Testament goes, it would convey the same idea. We must agree with Milton to set down

Belial, the dissoluteest spirit that fell.

BELIDOR, BERNARD FOREST DE, a French writer on military science, was born in Catalonia in 1697, and died at Paris, Sept. 8, 1761. Left an orphan in his infancy, he was adopted by an officer of artillery, who educated him as his own child. Having served in the army, he was appointed professor in the royal school of artillery at La Fère, and soon after published his work on mathematics for the use of military engineers. In 1742 he fought in Bavaria under Gen. de Ségur.

BELIEF. In a perfectly general sense, belief is the assent of the understanding to the truth of a proposition. In a technical and theological sense, it has come to be used as a mental exercise somewhat depending upon the volition of the individual. A distinction is therefore made between believing with the mind, or the assent of the understanding, and the affiancing of the will. This latter is the technical belief of theology, or what is sometimes termed "saving faith." Thus men are exhorted to this exercise of faith, and rebuked for having postponed it. Belief is also used theologically to express the body of doctrine which an individual or denomination adopts and professes, as when we say, after giving a summary of theological dogmas, "This is the belief of the catholic church." That is, belief is used to signify the thing believed.

BELIEVER, one who believes any proposition. Since about the close of the 12th century, however, the word has been applied to those who believe the doctrines of the gospel, and have been baptized in that faith. It is in this

sense another term for a member of a Christian church, and in this use it simply distinguishes all such persons from those who have not been baptized in the Christian faith, who are classed as unbelievers. The word unbeliever is also sometimes in theology applied to one who is sceptical as to the doctrines of Christianity.

BELISARIUS, a distinguished Roman general of the lower empire, born about the close of the 5th century, died A. D. 565. To him the emperor Justinian owed much of the splendor of his reign. Descended from an obscure family in Thrace, he attained the highest dignities of the empire. He successively defeated the Persians, the Vandals, and the Goths, taking the kings of the two latter nations, Gelimer and Vitiges, prisoners, and leading them in triumph to Constantinople, where a medal, still extant, was struck in his honor, inscribed *Belisarius gloria Romanorum*. He also suppressed the tumults arising from the contests of the blue and green factions, which, having their origin in the chariot races of the hippodrome, brought the life of the emperor into the greatest danger, and caused Hypatius to be nominated rival emperor, until he was put down by Belisarius. In all his career, he lost but a single battle, to the Persians. On his return to Constantinople, he was accused of taking part in a conspiracy, and was for a time in disgrace. But, convinced of his innocence, Justinian restored to him his favor and his dignities. The whole of the romantic story of his blindness, his imprisonment, and his begging his bread with the plaintive cry, *Dato obolum Belisario*, is pure fiction, without a shadow of foundation.

BELIZE. See BALIZE.

BELKNAP, a south-eastern county of New Hampshire; area, 387 sq. m.; pop. in 1850, 17,721. Winnepiseogee lake forms its N. E. boundary, and Winnepiseogee river flows for some distance along its southern border. The Pemigewasset touches it on the west. The surface is uneven, and between many of the hills by which it is diversified lie small lakes. The soil, though rocky in some places, is generally fertile, and in 1850 produced 14,028 bushels of wheat, 118,007 of corn, 385,092 of potatoes, 38,445 tons of hay, and 471,143 pounds of butter. There were, during the same year, 4 cotton and 6 woollen factories, a car factory, an iron foundry, 6 flour, 1 grist, and 18 saw mills in operation in the county, and 4,930 pupils attending the public schools. A railroad from Concord to Warren, and one from Dover to Alton, pass through portions of Belknap county. Capital, Gilford.

BELKNAP, JEREMY, D. D., an American clergyman and historian, born in Boston, June 4, 1744, died there June 20, 1798. He graduated at Harvard college in 1762, and was ordained, after 4 years' service as a school teacher, as pastor of the church in Dover, New Hampshire, in 1767, where he passed 20 years. In 1787 he took the charge of

the Federal street church in Boston, which he held until his sudden death by paralysis.—He was fitted by nature for an annalist and historian. From the age of 15 he kept notes and abstracts of his reading, and a series of interleaved and annotated almanacs, of which curious specimens are preserved. His history of New Hampshire was commenced soon after his residence at Dover, and though somewhat interrupted by the scenes of the revolution, in which he took the part of a good whig, he prosecuted it with great care and diligence. The 1st volume appeared at Philadelphia in 1784, the 2d in Boston in 1791, and the 3d in that city in the following year. Not paying the expenses of publication, the legislature of New Hampshire granted him £50 in its aid. This work has long ranked at the head of the local histories of the country for its agreeable manner and historical fidelity. It shows, also, the power of a comprehensive and methodical thinker. In 1790 he projected the Massachusetts historical society, which has been followed by similar associations throughout the country. In 1792 he published, in successive numbers of the "Columbian Magazine," "The Foresters," an apologue after the manner of Arbuthnot's "John Bull," intended to represent the course of the history of the country, and particularly the formation and adoption of the federal constitution. It is done in a most humorous and agreeable style. The next year he published a life of Watts; in 1794, a series of American biographies; and, in 1795, the "Collection of Psalms and Hymns," for a long time in use in many of the New England churches, several of which were written by himself. He was also the author of many fugitive pieces, contributions to magazines, sermons, &c., printed at different periods of his life. A life of Dr. Belknap, by his granddaughter, with selections from his correspondence, was published in New York, in 1847.

BELKNAP, WILLIAM G., an American military officer, born in Newburg, N. Y., Nov. 14, 1794, died on the Washita river, Nov. 16, 1852. He was appointed 2d lieutenant in the 28d infantry, April 5, 1813; distinguished himself in the attack on Fort Erie, in Aug. 1814; was retained in service on the reduction of the army, in 1822, having been, in 1818, one of the assistant professors of tactics in the military academy. He became a captain in 1822, and was brevetted for faithful service, 10 years afterward. In 1842 he was appointed major of the 8d infantry, and, having served in Florida during the war, was made lieutenant-colonel by brevet. He served on the general staff at Buena Vista, was complimented in general orders, and received a sword of honor from the citizens of his own state, for his services in that battle. He also received the brevet of brigadier-general, having previously received that of colonel. From Dec. 1843, to May, 1851, he was in command of his regiment, and of the troops in the Cherokee nation (Arkansas). In May, 1851, he

was ordered to upper Texas, for the purpose of keeping the Indian tribes within the lines, and, while there, contracted a fever of which he died.

BELL, a hollow shaped metallic vessel, which, by its vibrations when struck, gives forth sounds; whence its name, from the old Saxon word *bellan*, to bawl or bellow. It is an instrument of great antiquity, being spoken of by the old Hebrew writers, as in Exodus xxviii., in which golden bells are prescribed as appendages to the dress of the high-priest, that notice may thus be given of his approach to the sanctuary. And at this day the bell is used for a similar purpose before the priest, in Catholic countries, as he proceeds to render the rite of extreme unction to the soul that is passing away; and so when the bell is tinkled, in administering the sacrament, by the same priest, it is in pursuance of a custom founded on the ancient Hebrew use of the bell. More intimately than any other instrument are bells associated with the religious and imaginative, as also with the most joyous and the saddest feelings of mankind. A quaint old writer describes their threefold duties thus:

To call the fold to church in time,
 We chime.
 When joy and mirth are on the wing,
 We ring.
 When we lament a departed soul,
 We toll.

By the Roman Catholics, bells are solemnly blessed, as they are consecrated to their holy work of summoning worshippers to their religious rites. From the circumstance of the bell receiving a name, and being washed with holy water, the ceremony is frequently called the baptism of bells. It is a mistake, however, to suppose that the form of baptism is used. There appears to be something poetical, and a little playful, in the custom of giving the bell sponsors, who are usually persons who have presented the bell to the church, or who contribute handsomely to the expense of purchasing it, at the time of the blessing. Chrism and oil are used in the ceremony of benediction, and in all the more solemn consecrations of utensils employed in the divine service. The consecration of bells dates back to a very early period. In Charlemagne's capitulary of 787, we find the prohibition "*ut cloccæ baptiscentur*;" and in the old liturgies of the Catholic church is a form of consecration directing the priests to wash the bell with water, anoint it with oil, and mark it with the sign of the cross, in the name of the Trinity. Names were given to bells as early as the year 968, when the great bell of the Lateran church was named by John XIII., for himself, John.—The ancient custom of ringing the passing bell, that those who heard it might pray for the soul that was leaving this world, appears to have given to the bell a mysterious connection with departed spirits; and the belief has extensively prevailed that the evil spirits, waiting to seize the stranger about entering their domain, are driven off in terror at its sound, and leave to the neophyte an entrance free and unobstructed. And when

"the curfew tolled the knell of parting day," a sadder influence was shed over the spirits of our fathers than was justified by the fact that this curfew bell was only a signal for all to put out their fires. According to some historians, this custom was introduced into Great Britain by William the Conqueror, though others date it back to the reign of the good king Alfred. The practice of ringing a bell at an early hour in the evening was not peculiar to England, for it prevailed to a considerable extent in various countries on the continent; as the buildings at this early period were mostly of wood, it was intended as a precaution against fires, which were then very common. The passing bell and the curfew bell are still represented in some New England villages; the one, as a funeral procession slowly wends its way to the graveyard, and the other, by the 9 o'clock bell, which hints the time for visiting to cease, and preparations to be made for bed—an hour later than in the time of William the Conqueror, it is true, but yet, in general, an hour or two too early, even for the quiet residents of New England towns.—As a signal to call the people together to join in any concerted action, the bell has been used from remote times; the feast of Osiris was announced by the ringing of bells, and the same sound to this day notifies to hungry mortals the time to join in satisfying the calls of their appetite. The Romans by bells announced the time for bathing; and the early Christians adopted the same signal for designating the hour of prayer, kept up by the Roman Catholic in the ringing of the *Angelus* at morning, noon, and night, at the sound of which all good Catholics join in this rite; and by the Protestant, in the church-going bell, which summons him to his devotion in the hour of prayer. In times of public danger, the bells were rung, and signal fires were burned to alarm the country; sometimes, also, they were employed to alarm the public enemy as well, under the impression, apparently, that they would be inspired with the same terror as the evil spirits waiting for their victim. In the year 610, when Clothaire II., king of France, besieged Sens, Lupus, the bishop of Orleans, ordered for this purpose the bells of St. Stephens to be rung; and as late as 1457, Calixtus III. employed the same device as a security against the dreaded Osmana, who considered bells their most dangerous foe; whence they were at this time called Turks' bells.—In our cities, alarm bells are rung to an extent our ancestors never dreamed of; and their sound, grown familiar to our ears, no longer inspires terror, as it calls the firemen to their constant duties. In the quaint old rhymes of the monks, and the songs of the poets, which commemorate the uses of the bell, this modern application of it is not alluded to. They tell us of the bell—

*Laudo Deum verum, plebem voco, congrego clerum,
Defunctos ploro, pestem fugo, festa decoro.*

Schiller, however, in his celebrated "Song of the Bell," the motto of which is,

Vivos voco, mortuos plango, fulgura frango,

does not omit to notice this fear-inspiring sound. Indeed, in this beautiful poem, all the joys, sorrows, pangs, emotions, terrors, and blessings attendant on humanity, in connection with the part which the bell plays, are most vividly portrayed. Even the description of the various operations of mixing and fusing the alloy, and pouring the liquid metal into the mould prepared to give it its shape, are happily interwoven with all those uses which the bell is thereafter to serve. Each phase of the process suggests its appropriate phase of human life; and the story of the bell draws forth those admirable pictures of the infant presented at the baptismal font—of the maiden at the altar—of the sweet ministrations of maternity and home—of man's ambition, and woman's love—such as the hand of a master-workman alone can produce. The fire-bell is also well described by the American poet, Edgar A. Poe:

Hear the loud alarm bells—
Brazen bells!
What a tale of terror now their turbulence tells!
In the startled ear of night,
How they scream out their affright!
Too much horrified to speak,
They can only shriek, shriek,
Out of tune,
In a clamorous appealing to the mercy of the fire,
In a mad exhortation with the deaf and frantic fire.

The use of the bells "*fulgura frangere*" is from the old belief, that as they served to alarm the spirits of the air, so those that rule the storm are frightened away, its power is broken, and the thunderbolt is averted.—Music bells are still in use in some parts of Europe. These are played by means of keys, not unlike those of a piano-forte. An old painting of King David represents him as playing, with a hammer in each hand, upon 5 bells, which were hung up before him. The music of the 88 bells which were suspended in the tower of the cathedral at Antwerp is highly celebrated. One of these bells was 7 feet wide, and 8 feet high. The Swiss bell-ringers, famous for their performances, produce the most exquisite melody from hand-bells. So skilful are they in the use of them, that they will change from one to another with almost the same rapidity as printers take up their types. The bells vary in size from a large cow-bell to the smallest dinner bell; and as many as 42 are often used by a company of 7 persons.—Bells were early introduced into almost all the countries of Europe. We find 8 golden bells, in an azure field, making the coat of arms of the imperial house of the Comneni, one of the most illustrious families that have occupied the Byzantine throne. About the year 400, bells were first used for churches by St. Paulinus, bishop of Nola, a city of Campania; and hence the names given to church bells in some of the European languages of *Nola* and *Campana*. In England and France they were in use as early as the 6th century, and the first parish churches appear to have been furnished with their campanile or bell-tower, which still continues to be

one of their distinguishing features. Several were used in a single church, as is still the custom, when arranged in chimes, or, as in Roman Catholic countries, without regard to harmony of tones. The church of the abbey of Croyland in England had one great bell named *Guth-lae*, presented by the abbot Turketulus, who died about the year 870, and subsequently 6 others, presented by his successor, Egelric, and named Bartholomew and Betelin, Turketul and Tatwin, Bega and Pega. When all these were rung together, Ingulphus says, "*Fiebat mirabilis harmonia, nec erat tunc tanta consonantia campanarum in tota Anglia.*"—But Russia exceeds all other nations in its fondness for bells. In Moscow alone, before the revolution, there were no less than 1,706 large bells; in a single tower there were 37. One was so large that it required 24 men to ring it, and this was done by simply pulling the clapper. Its weight is estimated at 288,000 lbs. The great bell cast by order of the empress Anne, in 1658, and now lying broken upon the ground, is estimated to weigh 448,772 lbs.; it is 19 feet high, and measures around its margin 68 feet 11 inches. The value of the metal alone in this bell is estimated to amount to over \$300,000. Whether this bell was ever hung or not, authorities appear to differ. The following notice of the bells of Moscow, and of the great bell in particular, is from Clarke's Travels: "The numberless bells of Moscow continue to ring during the whole of Easter week, tinkling and tolling without harmony or order. The large bell near the cathedral is only used upon important occasions, and yields the finest and most solemn tone I ever heard. When it sounds, a deep hollow murmur vibrates all over Moscow, like the faintest tones of a vast organ, or the rolling of distant thunder. This bell is suspended in a tower called the belfry of St. Ivan, beneath others which, though of less size, are enormous. It is 40 ft. 9 in. in circumference, 16½ in. thick, and it weighs more than 67 tons. The great bell of Moscow, known to be the largest ever founded, is in a deep pit in the midst of the Kremlin. The history of its fall is a fable, and as writers continue to copy each other, the story continues to be propagated; the fact is, the bell remains where it was originally cast; it was never suspended. The Russians might as well attempt to suspend a first-rate line of battle ship with all its guns and stores. A fire took place in the Kremlin, the flames of which caught the building erected over the pit in which the bell yet remained; in consequence of this the metal became hot, and water thrown to extinguish the fire fell upon the bell, causing the fracture which has taken place.... The bell is truly a mountain of metal. They relate that it contains a very large proportion of gold and silver, for that while it was in fusion the nobles and the people cast in as votive offerings their plate and money.... I endeavored in vain to assay a small part. The natives regard it with superstitious veneration, and they would not

allow even a grain to be filed off; at the same time, it may be said, the compound has a white, shining appearance, unlike bell-metal in general, and perhaps its silvery appearance has strengthened, if not given rise to a conjecture respecting the richness of its materials. On festival days the peasants visit the bell as they would a church, considering it an act of devotion, and they cross themselves as they descend and ascend the steps leading to the bell." After Mr. Clarke's visit the czar Nicholas, in the year 1837, caused the great bell to be taken out of the deep pit in which it lay, and to be placed upon a granite pedestal. Upon its side is seen, over a border of flowers, the figure of the empress Anne in flowing robes. The bell has been consecrated as a chapel; and the door is in the aperture made by the piece which fell out. The size of the room is 22 ft. diameter, and 21 ft. 3 in. in height.—The bells of China rank next in size to those of Russia. In Pekin, it is stated by Father Le Compté, there are 7 bells, each weighing 120,000 lbs. Excepting the bells recently cast for the new houses of parliament, the largest of which weighs 14 tons, there is only 1 bell in England larger than that upon the city hall in New York city. It was cast in 1845 for York Minster, and weighs 27,000 lbs., and is only 7 feet 7 inches in diameter. The great Tom of Oxford weighs 17,000 lbs.; and the great Tom of Lincoln 12,000 lbs. The bell of St. Paul's in London is 9 feet diameter, and weighs 11,500 lbs. One placed in the cathedral of Paris, in 1680, weighs 88,000 lbs. Another in Vienna, cast in 1711, weighs 40,000 lbs.; and in Olmutz is another weighing about the same. The famous bell called Susanne of Erfurt is considered to be of the finest bell metal, containing the largest proportion of silver; its weight is about 80,000 lbs. It was cast in 1497. Luther, when a schoolboy, must have heard its earliest peals, and in later years have welcomed its sound at each return to Erfurt. At Montreal, Canada, is a larger bell than any in England. It was imported in 1843 for the Notre Dame cathedral. Its weight is 29,400 lbs. In the opposite tower of the cathedral is a chime of 10 bells, the heaviest of which weighs 6,043 lbs., and their aggregate weight is 21,800 lbs.—There are few bells of large size in the United States. The heaviest is the alarm bell on the city hall in New York. It was cast in Boston, and weighs about 23,000 lbs. Its diameter at mouth is about 8 feet; its height about 6 feet, and thickness at the point where the clapper strikes 6½ or 7 inches. The bell now on the hall of independence in Philadelphia, is celebrated as being connected with the ever memorable 4th of July, 1776, when it first announced by its peal the declaration then made, the most important event in the history of our country. It was imported from England in 1752, and owing to its being cracked on trial by a stroke of the clapper was recast in Philadelphia under the direction of Mr. Isaac Norris, to whom we are probably indebted for the following in-

scription, which surrounds the bell near the top, from Leviticus xxv. 10: "Proclaim liberty throughout all the land, unto all the inhabitants thereof." Immediately beneath this is added: "By order of the assembly of the province of Penn^a. for the State House in Phil^a." Under this again, "Pass & Stow, Phil^a., MDCCLIII." In 1777, during the occupation of Philadelphia by the British, the bell was removed to Lancaster. After its return it was used as state house bell until the erection of the present steeple with its bell in 1828. Then it ceased to be used excepting on extraordinary occasions. Finally it was removed to its present appropriate resting-place in the hall of independence. Its last ringing, when it was unfortunately cracked, was in honor of the visit of Henry Clay to Philadelphia. There are no other bells of particular interest in this country. Those used upon the fire alarm towers in our cities are from 10,000 to 11,000 lbs. weight. They are hung in a fixed position and struck by a hammer, instead of being turned over.—Bells have been made of various metals. In France formerly iron was used, and in other parts of Europe brass was a common material. In Sheffield, England, the manufacture of cast-steel bells has been recently introduced; the material is said to have the advantages over the ordinary composition, of greater strength and less weight and cost. As the swinging of heavy bells often endangers the towers in which they are hung, it is of no little consequence to reduce as much as possible their weight. Steel bells are cast by pouring the contents of the steel pots into the bell mould instead of into the ordinary ingot moulds. Their tone is said to be harsh and disagreeable. Cast-steel drills, bent into the form of a triangle and suspended to a building or post, are much used in place of bells about mining establishments. Bell-metal is an alloy of copper and tin in no fixed proportion, but varying from 66 to 80 per cent. of copper, and the remainder tin. But other metals are also often introduced, as zinc, with the object of adding to the shrillness of the sound, silver to its softness, and also lead. Dr. Thompson found an English bell-metal to consist of copper 800 parts, tin 101, zinc 56, and lead 48. Cymbals and gongs contain 81 copper and 19 tin. Mr. Denison, who has charge of the founding of the new bells for the British houses of parliament, thinks the use of silver is entirely imaginary; and that there is no reason for believing it could be of any service. He condemns the use of all other materials but copper and tin, and advises that contracts for bells stipulate that the alloy shall consist of at least 90 per cent of tin, and the remainder copper. Three and a half to one is perhaps the best proportion. Much interesting information upon the qualities of the alloys and the forms of bells is contained in a paper recently presented by him to the royal institution of Great Britain. He regards the hemispherical form of modern bells as adapted only for giving a thin and poor sound,

suitable for house clocks and such uses, but entirely unfitted for the heavy, far-reaching, and pleasing tones required in large bells. The European process of casting bells is to make the mould in a depression in the sand floor of the foundry, piling up a hollow core of brickwork upon a solid foundation, within which a fire is kept burning to preserve the liquid metal, when poured around it, from too rapid cooling. The outer surface of the core is the shape of the inner surface of the bell. To give the outer surface, a cover of earthenware is fashioned to fit over the core, leaving between these a vacant space to be filled with the metal. This arrangement is deficient in not providing proper escape for the gases, which are engendered in heavy castings in the earth, and which are liable to cause the metal to be porous, or, being highly inflammable, to explode with great damage. An improved process has been introduced at Meneely's bell foundry at Troy, New York, consisting in the use of perforated iron cases, the outer one in the shape of the bell, and the inner one the core, which sets in the centre of its saucer-shaped foundation. Each of these receives a coating of loam, the outer one within, and the core around its outside; but over the latter is first wrapped a straw rope, which taking fire and burning slowly, as the metal is poured between the 2 cases, leaves a free space for the bell to contract in cooling without straining. The perforations through the cases let out the vapors, and also serve to keep the coating of loam in its place. As the gas escapes through these holes, it burns with a pale blue flame without risk, the whole apparatus being placed above the level of the ground. Flanges between the 2 cores keep them at the required distance from each other, in order to give the proper thickness of metal.—The best proportion of the height of a bell to its greatest diameter is said, by foreign authorities, to be as 12 to 15. In conformity to the laws of acoustics, the number of vibrations of a bell varies in inverse ratio with its diameter, or the cube root of its weight; so, for a series of bells forming a complete octave, the diameters should go on increasing with the depth of tone, as for *do*, 1; *re*, $\frac{3}{2}$; *mi*, $\frac{4}{3}$; *fa*, $\frac{5}{4}$; *sol*, $\frac{6}{4}$; *la*, $\frac{7}{4}$; *si*, $\frac{8}{3}$; *do*, $\frac{9}{2}$.—A work on church bells, by the Rev. W. C. Lukis, appeared at London in 1857.

BELL, a central county of Texas, watered by Little river and its head streams the Leon and Lampasas. It has an area of about 850 square miles, a fine, rolling surface, and a soil consisting of sandy loam, well adapted to pasturage. Forests of cotton wood and live oak cover about $\frac{1}{2}$ of the land. Pure water is abundant, and the climate generally healthy. The county was formed from Milam in 1850, and its increase from that period up to 1858 has been at least six-fold. Wheat and Indian corn are the staple productions. Value of real estate in 1857, \$596,300; value of horses and cattle, \$156,372; aggregate value of taxable property, \$1,265,110.

Capital, Cameron. Pop. in 1856, 4,481, of whom 560 were slaves.

BELL, ANDREW, a clergyman of the English church, who introduced into the English schools what was termed the system of mutual instruction, born at St. Andrew's, Scotland, in 1753, died at Cheltenham, England, Jan. 27, 1832. After studying in the university of his native town, he visited the colonies of America, and in 1789 went to India, where at Madras he became chaplain of Fort St. George, and engaged to instruct the orphan military asylum. He found in the mission schools of India a monitorial system, which on his return to England he explained in an elaborate treatise and proposed for adoption into English schools. The system consists in a division of the school into classes, and of the classes into pairs. The 2 members of a pair are each pupil and tutor of the other. Each class has a teacher and assistant teacher who assist the tutors, and a master, the only adult member of the system, has the general superintendence. It was not, however, till an analogous system had been introduced by the Quaker, Joseph Lancaster, into the schools of the dissenters, that Dr. Bell was authorized by the Anglican church to employ it in schools placed under his charge. He published several works upon educational subjects, and left all of his fortune for the endowment of various schools.

BELL, BENJAMIN, a Scotch surgeon, born at Edinburgh, died near the beginning of the present century. After studying in the principal universities of the continent, he became one of the surgeons of the royal infirmary at Edinburgh. He wrote several professional works, of which the most important is his "System of Surgery."

BELL, SIR CHARLES, a British surgeon and anatomist, born at Edinburgh, in Nov. 1774, died at Hallow Park, in Worcestershire, April 29, 1842. He began his education in the high school and university of his native city, and pursued his professional studies under his elder brother John, who was already distinguished as an anatomist and surgeon. He quickly gave evidence of his great talents, was admitted in 1799 to the college of surgeons, became at the same time one of the surgeons to the royal infirmary, and while still a youth delivered lectures before 100 pupils on the science of anatomy. He gave particular attention to dissections, which he illustrated by many careful drawings, some of which were published, and he eagerly availed himself of all the opportunities afforded by the infirmary for studying pathology and observing the diseased appearances when bodies were dissected, and in many cases he made representations of the morbid parts in models. Ambitious of a larger field of exertion, and weary of the dissensions which vexed the medical school of Edinburgh, he removed in 1806 to London, where he immediately began a course of lectures, became acquainted with Sir Astley Cooper, Abernethy, and other famous surgeons, and rapidly rose to distinction. He now published

his work on the "Anatomy of Expression," which he had written in Edinburgh, and which was designed to show the rationale of those muscular movements which follow and indicate the excitement of the various passions and emotions. The work attracted attention, being valuable to the physician, since it showed how the countenance often betrays the nature of the disease, and its value to the painter is seen in the fact that Wilkie carefully studied it while drawing the human figure, and Ruskin often refers to it in his criticisms. It is also interesting as having occasioned the author those investigations which led him to his great discovery concerning the nervous system. He published in 1807 his "System of Operative Surgery," a work, the practical character of which renders it still useful. Letters which he this year wrote to his brother announced his new doctrine of the nervous system, but he did not publish his views for many years. He supported himself unconnected with any medical schools till 1811, when he was invited to the Hunterian school, and 8 years later he was appointed surgeon to the Middlesex hospital, an institution which during the 22 years of his connection with it he raised to the highest repute both by his striking manner of lecturing and his great dexterity as an operator. Zealous in the practice of military surgery, he visited the fields of Corunna and Waterloo, immediately after the battles, and gave his services to the wounded. He made known to the public in 1821 his ideas on the nervous system in a paper in the "Philosophical Transactions." It immediately arrested the attention of anatomists throughout Europe, some of whom contested with him the priority of discovery; yet it was fully proved that Dr. Bell had taught the doctrine for many years to his pupils, had explained it in a pamphlet, a private edition only of which was printed, in 1810, and had clearly stated it in letters to his brother in 1807, when all of his rivals were teaching the old theory. The principle of the discovery is that no one nerve conveys both motion and sensation, carries both the impulses of volition from the brain and the impulses of the senses to the brain; but on the contrary, the nerves work only in one direction, one portion of them bearing messages from the body to the brain, and the other portion from the brain or will to the body. It had formerly been believed that both impulses might in some mysterious way be simultaneously and harmoniously communicated along the same chord. It was shown by Dr. Bell that the brain and spinal marrow are likewise divided into 2 parts, which minister respectively to the functions of motion and sensation; that those roots which join the back part of the spinal marrow are nerves of feeling, messengers from the senses, but incapable of moving the muscles, while those roots which have their origin in the front column of the spinal marrow and the adjacent portion of brain are nerves of voluntary motion, conveying only the mandates

of the will. He showed that though 8 distinct nerves may be bound together in a single sheath for convenience of distribution, they yet perform different functions in the physical economy, and have their roots divided at the junction with the brain. The nerves of the different senses are connected with distinct portions of the brain. Such is the outline of one of the greatest discoveries in physiology, and which entitles Bell to a glory equal to that of Harvey. As Harvey annihilated the theory of the flux and reflux of the blood through the same organs, and discovered the law of its circulation through the veins and arteries, so Bell distinguished the 2 classes and separate functions of the nerves. For this discovery he received a medal from the royal society of London, in 1829, and upon the accession of William IV. he was invested, in company with Brewster, Herschel, and others, with the honor of knighthood, in the new order then instituted. He was offered the senior chair of anatomy and surgery in the London college of physicians, where his lectures were attended both by pupils and practitioners, and where he attracted crowds by a series of discourses on the evidence of design in the anatomy of the human body. His reputation was great also upon the continent, and Cuvier expressed his admiration of his abilities and labors. He published about this time 2 essays, "On the Nervous Circle," and "On the Eye," having reference to the theory of a 6th sense, and a treatise on "Animal Mechanics," for the society for the diffusion of useful knowledge. Being invited to take part in the great argument published by the bequest of the earl of Bridgewater, he wrote the admirable treatise on "The Hand," and he soon after assisted Lord Brougham in illustrating Paley's "Natural Theology." In 1886 he accepted the chair of surgery in the Edinburgh university, and his lectures there were attended by the most eminent literary and scientific men in that capital. He afterward visited Italy, making many observations, with which he enriched a new edition of the "Anatomy of Expression;" he died soon after returning to England.

BELL, GEORGE JOSEPH, a Scotch lawyer and writer upon law, born at Fountainbridge, near Edinburgh, March 26, 1770, died in Edinburgh, Sept. 28, 1848. His first legal publication was a treatise on the laws of bankruptcy, which, in 1810, was enlarged and published under the title of "Commentaries on the Laws of Scotland." The third edition of this work, issued in 1816, gained for him the rare honor of a vote of thanks from the faculty of advocates. His subsequent works on the law of Scotland are standard text-books in the courts of that country, and are also referred to as authorities in England and America. Mr. Bell was at the head of 2 commissions for improving the administration of civil justice in Scotland, and from the year 1821 was professor in the university of Edinburgh. In 1881 he was appointed

ed to one of the principal clerkships in the supreme court.

BELL, HENRY, steam navigator, born at Torphichen, near Linlithgow, Scotland, April 7, 1767, died March 14, 1830. A millwright by trade, he went to London when his apprenticeship expired, and while in Mr. Rennie's service, conceived the idea of propelling vessels by steam—ignorant, it would appear, of Millar's prior experiments, and of the fact that, nearly 8 years before, Robert Fulton had actually made a successful practical attempt on the Hudson. In 1811 Bell launched a boat on the Clyde, calling it the Comet, after the luminous appearance in the heavens during that year. He made a steam engine for this new craft, with his own hands, and the first trial of the boat took place on the Clyde, in January, 1812. Three-horse power was successfully applied at first, subsequently increased to 6. After numerous experiments and improvements, steam navigation was introduced into Scotland by Henry Bell. His first boat is preserved in the museum of Glasgow university. The city of Glasgow settled a small annuity on him, barely sufficient for his support, and the British government, not long ago, gave a small pension to his widow. A monument to his memory has been erected on the rock of Dunglass, a promontory on the Clyde, 2½ miles from Dumbarton.

BELL, JAMES, geographical writer, born at Jedburgh, in Scotland, 1769, died at Glasgow, 1888. Brought up as a weaver, he received the ordinary sound education which the very poorest can claim in Scotland. He became a manufacturer of cotton goods in Glasgow, and, being an indefatigable student, was an able teacher of the classics to young men preparing for the university. He was author of a well-arranged and copious "System of Popular and Scientific Geography," in 6 volumes, 8vo, which has been repeatedly reprinted; also of a "Gazetteer of England and Wales."

BELL, JOHN, Scottish traveller, born at Antermony, in the west of Scotland, 1691, died July 1, 1780. At the age of 23, he received the degree of M. D., and immediately after (July, 1714) was induced to repair to St. Petersburg, where Peter the Great received him kindly, and allowed him to be engaged as surgeon to an embassy about to proceed to Persia. Leaving St. Petersburg in July, 1715, he did not reach Ispahan, where the shah held his court, until March, 1717. He returned to St. Petersburg on the last day of 1718. His desire of adventure unabated, he departed in July, 1719, attached to an embassy to China, through Moscow, Siberia, and the great Tartar deserts, to the great wall of China, not reaching Peking until November, 1720—the journey occupying 16 months. He resided half a year in Peking, and arrived at Moscow early in Jan. 1722. The czar having made him his chief physician, he joined in the expedition headed by Peter himself, to assist the shah of Persia in routing the rebel Afghans, and returned

with him. Soon after he revisited Scotland, but was at St. Petersburg in Dec. 1787, when, negotiations for peace between Russia and Turkey having failed, Dr. Bell was sent to Constantinople with new proposals, and returned to St. Petersburg in May, 1788, but finally settled as a merchant in Constantinople, where he married in 1746, and soon after returned to Scotland, fixing his residence on his estate of Antermory, in very affluent circumstances, and very popular from his benevolence and sociality. He did not publish any record of his wanderings until 1768, when his "Travels in Asia" appeared in 2 vols. 4to. This work, which has passed through several editions, has had large circulation throughout Europe by means of a French translation. Though not acquainted with the travels of Marco Polo, the Venetian, Dr. Bell confirms many of his marvellous relations. His own account of his residence in Pekin, is described as "one of the best and most interesting relations ever written by any traveller."

BELL, JOHN, an English farmer, remarkable for his longevity, born in 1747, died at Hexham, county of Northumberland, in 1857. He was below the middle size, slender and wiry-looking, and was distinguished during the whole course of his life for his temperance, frugality, and industry. He married in early life, and at the time of his death he had 8 children (2 had died), 41 grandchildren, 60 great-grandchildren, and 2 great-great-grandchildren.

BELL, JOHN, Scottish surgeon, born at Edinburgh, May 12, 1768, died at Rome, April 15, 1820, studied for his profession at the medical schools of his native city. On taking his diploma and commencing practice, he opened a private school of anatomy, and gave lectures with the view of inculcating the necessity of a knowledge of anatomy on surgical practitioners. At this time, incredible and inconsistent as it may now appear, anatomy was very imperfectly studied by surgeons, although it formed part of the physician's preparatory professional studies. Private teaching and private dissections were also novelties, and Mr. Bell's ideas gave great offence to the established Gamaliels, who considered them innovations and a slur upon their competency. Notwithstanding an active opposition, his merits secured him a large class of pupils, and enabled him to introduce his own enlarged views of professional requirements to public notice. His career as a teacher was, however, cut short by the determined opposition of his rivals, who managed to exclude him and his class from the public infirmary, in which he had been accustomed to practise gratuitously for the benefit of the poor, taking advantage of the field thus open to him to instruct his pupils. On this, he gave up his lectures and demonstrations, and addressed himself to private practice only. He passed the last 8 years of his life in Italy for the benefit of his health. His works were: "Anatomy," afterward completed by his brother, Sir Charles Bell; "Discourses on the Na-

ture and Cure of Wounds," 2 vols. 8vo; "The Principles of Surgery," 3 vols. 4to. Beside these, he wrote letters on professional education, and a posthumous work on Italy.

BELL, JOHN, an American statesman, born near Nashville, Tenn., Feb. 18, 1797. He was the son of a farmer in moderate circumstances, who was, however, able to give him a good education at Cumberland college, now Nashville university. Choosing the law as his profession, he was admitted to the bar in 1816, settled at Franklin, Williamson county, and was elected to the state senate in 1817, when only 20 years old. He soon saw his error in entering so early into public life, and declining a reflection, devoted himself for the next 9 years to his profession. In 1826 he became a candidate for congress against Felix Grundy, one of the most popular men in the state, and who had the powerful support of Andrew Jackson, then a candidate for the presidency against John Quincy Adams. Nevertheless, after a most animated and excited canvass of 12 months, Mr. Bell was elected in 1827, by 1,000 majority. By successive elections, he continued a member of the house of representatives for 14 years. He entered congress a warm admirer of Mr. Calhoun, and strongly opposed to the protective system, against which he made a speech in 1832. Subsequent investigation and reflection induced him to change his opinions on that subject, and he has ever since remained an earnest advocate of the policy of protecting American industry. Though opposed to the appropriation of money by the general government for roads and canals in the states, except in the case of some great road for military purposes like the Pacific railroad, he has always favored the policy of improving the great rivers and lake harbors. With all his admiration for Mr. Calhoun, Mr. Bell decidedly opposed the South Carolina doctrine of nullification, and was made chairman of the judiciary committee of the house with special reference to the questions connected with that subject which might have to be considered and reported on. For 10 years he was chairman of the committee on Indian affairs. He was in favor of a United States bank, though he voted against the bill for its recharter in 1832, because he believed that the subject was brought up at that time, 4 years before the expiration of the old charter, merely to defeat Gen. Jackson in the ensuing presidential election; and because he was convinced the president would veto the bill, which proved to be the case. He protested against the removal of the deposits, and refused to vote for a resolution approving that measure. This refusal was one of the causes which led to the subsequent breach between himself and President Jackson and the democratic party, and finally to his cooperation with the whigs. This change of party relations was much accelerated by his election to the speakership of the house of representatives in 1834. In June of that year, the speaker, Mr. Stevenson, resigned the chair upon being nominated minister to

Great Britain, and Mr. Bell was elected to succeed him in opposition to James K. Polk, afterward president of the United States, who was the candidate of the administration and of the democratic party. Mr. Bell was supported by the whigs and by a portion of the democratic party who were opposed to the intended nomination of Martin Van Buren as successor to President Jackson. The principal ground of Mr. Bell's opposition to Mr. Van Buren was his strong disapproval of the system of removals from subordinate offices for merely political reasons—a system which Mr. Van Buren had zealously promoted in the party conflicts of the state of New York, and which it was supposed he intended to carry out to its full extent in the administration of the federal government. The tendencies of such a use of executive patronage had been vividly portrayed by Mr. Bell in a speech in the house on the freedom of elections; and he had made repeated, though ineffectual, efforts in successive congresses to procure the enactment of laws calculated to check the policy. The final separation between Mr. Bell and Gen. Jackson took place in 1835, when Mr. Bell declared himself in favor of Judge White for the presidency, in opposition to Mr. Van Buren. Up to that time there had been no opposition in Tennessee to Gen. Jackson's administration, and it was generally supposed that his personal and political influence could not fail to subdue the opposition raised by Judge White and his friends. The whole force of the administration, and of Jackson's personal popularity, was exerted to this end. But Judge White carried the state by a large majority; Mr. Bell was reelected to congress from the Hermitage district itself by as great a vote as ever; and an impulse was given to the political character of Tennessee which arrayed it in opposition to the democracy during the four succeeding presidential elections of 1840-'44-'48-'52. When the reception of petitions for the abolition of slavery in the district of Columbia was agitated in the house of representatives in 1836, Mr. Bell alone of the Tennessee delegation favored their reception, and though assailed at home, was sustained by the people. And subsequently, in 1838, when Atherton's resolutions were introduced, proposing to receive and lay these petitions on the table, he maintained his consistency by voting in the negative, in order that they might be referred and reported upon. When President Harrison formed his administration in 1841, he invited Mr. Bell to accept the war department, which he did. With the rest of the cabinet, Mr. Webster only excepted, he resigned office on the separation of President Tyler from the whig party, in the autumn of that year. The whig majority in the next Tennessee legislature which met after his withdrawal from the cabinet offered him the office of United States senator, which, however, he declined in favor of Ephraim H. Foster, who had rendered services to the whig party which Mr. Bell thought deserving that recognition. Mr. Foster

was accordingly elected, and Mr. Bell remained in voluntary retirement until called by the people of his county, in 1847, to represent them in the state senate; in which year, on the occurrence of a vacancy, he was elected to the United States senate, to which he was reelected in 1853 for his present term of service, which will expire March 4, 1859.—In the senate Mr. Bell has steadfastly opposed the policy of annexing Mexico and other Spanish-American states to the union. He was in favor of the compromise measures of 1850, but desired to see the issues then made fully settled at the time by the division of Texas into states, as provided by the act of annexation, because he apprehended, whenever that question came up, the harmony of the union might be again disturbed. In 1854, when the Nebraska bill was presented to the senate, Mr. Bell protested against its passing, as a violation of the Missouri compact, as unsettling the principles established by the compromise of 1850, and as reopening a sectional controversy which might imperil the peace and safety of the union. In the controversy on the admission of Kansas, in March, 1858, Mr. Bell took decided ground against the so-called Lecompton constitution, and made an elaborate speech, charging that that measure tended directly to the overthrow of the union.

BELL, JOHN, British sculptor, born in Norfolk in 1800. After having followed the routine of the antique school, as it is called, he devoted himself to subjects from the Scriptures, and from modern literature. Thence came his "John the Baptist," "David with the sling," the "Madonna and Child," &c. For the new houses of parliament, Mr. Bell has executed historical portraits of Shakespeare, Lord Falkland, and Sir Robert Walpole. Mr. Bell has worked a good deal for decorative manufacturers.

BELL, LUTHER V., M. D., LL. D., an American physician, born at Chester, N. H., Dec. 20, 1806, son of the late Gov. Samuel Bell, of that state. He entered Bowdoin college at the age of 12, and graduated with distinction in 1821, before he had completed his 16th year. He commenced the study of medicine with an elder brother in the city of New York, and received his degree from the Hanover medical school while yet under 20, and commenced practice in New York. His friends afterward urged his return to New Hampshire and he established himself in his native town. He soon achieved distinction, particularly in surgery. One of his earlier operations, the amputation of the femur, was performed, in default of any other accessible instruments, with the patient's razor, a tenor saw, and a darning needle for a tenaculum, and the patient had a speedy recovery. Dr. Bell early acquired reputation from his ability as a writer on medical subjects. For 2 years in succession, while still under 30 years of age, he won the Cambridge Boylston prize medal by medical essays of such merit, that they still form a part of the standard medical literature of the country. It was about this period that

the success of the state lunatic hospital at Worcester, Mass., began to attract the attention of the philanthropic in New Hampshire to the necessity of a similar institution in their own state. Dr. Bell devoted himself with great zeal to the promotion of this enterprise. Twice he was elected to the legislature for the defence of his favorite plan, but, though his efforts were not immediately successful, the ability he had displayed in the discussion of the subject, led to his election, entirely without his knowledge, to the superintendency of the McLean insane asylum, at Charlestown, Mass. He entered upon his duties in Jan. 1837, and for nearly 20 years conducted the institution with rare ability and success. In 1845, the trustees of the Butler hospital for the insane at Providence, R. I., procured his services to visit Europe, and ascertain what improvements had there been made in the construction and ventilation of insane hospitals. His absence of only three months was devoted entirely to the work assigned him, and on arriving at New York, he had already completed plans for the construction of a hospital, which, for its size, has no superior in the country in its adaptation. Within the last few years, Dr. Bell has mingled somewhat in political life. He has been one of the executive council of Massachusetts; a member of the constitutional convention of 1852; the nominee of his party for congress, and for the governorship. In 1856 he resigned his position as superintendent of the McLean asylum.

BELL, ROBERT, an Irish man of letters, born at Cork, Jan. 10, 1800. After receiving his education at Dublin, he followed successively a military and a civil career, but quickly abandoned both for literary occupations. He published articles in a Dublin magazine, and wrote 2 comedies, the "Double Disguise," and "Ombio Lectures," which were successfully produced upon the stage. He went to London, where he contributed a series of "Reminiscences" to the "New Monthly Magazine," and wrote for the weekly "Atlas," which was one of the chief mingled literary and political journals published in London. One of his articles in the latter paper having provoked Lord Lyndhurst to bring a suit against him, he conducted his own defence, and was acquitted. He wrote, for Lardner's "Cabinet Cyclopædia," the "History of Russia," and the "Lives of the English Poets;" and he was the author of the last volume both of Southey's "Naval History of England" and of Mackintosh's "History of England." He founded in 1840, in connection with Bulwer and Lardner, the "Monthly Chronicle," to which he was a principal contributor. He has written several theatrical pieces, among which are "Marriage," "Mothers and Daughters," and "Temper," and has also published a "Life of Canning," "Outlines of China," "Memorials of the Civil War," "Wayside Pictures through France, Belgium, and Holland," and the "Ladder of Gold." Mr. Bell is of an amiable char-

acter, and though he has written many criticisms he has made few enemies.

BELL, SAMUEL, an American statesman, born at Londonderry, N. H., Feb. 9, 1770, died at Ohester, Dec. 23, 1850. He passed his boyhood upon his father's farm, graduated at Dartmouth college in 1793, and was admitted to practise law in 1796. He rapidly achieved distinction in his profession, and in 1804 was elected a representative to the state legislature, an office to which he was twice reelected; and during his last 2 terms he held the position of speaker of the house. He declined the attorney-generalship in 1807, after which he was successively a member of the state senate, and of the executive council, a judge of the supreme court, and in 1819 governor of the state. To the latter office he was reelected 4 times in succession, till in 1823 he was elected to the senate of the United States, an office to which he was also reelected. He retired from public life upon the expiration of his second term in 1835, and upon a farm in Ohester devoted himself to rural and literary pursuits, and enjoyed the society of his family and friends.

BELL, THOMAS, an English naturalist, born at Poole, in Dorsetshire, Oct. 11, 1793. His favorite study from boyhood was natural history, and at an early age he became a member of the London college of surgeons, and of the Linnæan society. In 1817 he began a course of lectures in Guy's hospital, where he had been for 3 years a student, and where he has continued to lecture either upon natural history or comparative anatomy to the present time. He was one of the founders of the "Zoological Journal," and one of the earliest fellows of the geological and zoological societies. In 1827 he communicated to the "Philosophical Transactions" a paper on the use of the submaxillary gland in the genus *crocodilus*, suggesting that the gland being odoriferous had the effect of attracting toward it small fish, which became the animal's prey. The next year he was elected a fellow of the royal society, and in 1836 he became professor of zoology in King's college. He was a long time secretary of the royal society, and has been president of the Linnæan society since 1853, and of the Ray society from its establishment. He has written largely upon his favorite science, having published, beside many papers in the transactions of learned societies, histories of British quadrupeds and reptiles, and treatises on the *testudinata*, and on the British stalk-eyed *crustacea*.

BELL ROCK, or INCH CAPE, a dangerous reef of rocks in the German ocean, off the E. coast of Scotland, nearly opposite the mouth of the river Tay; lat. 56° 26' N., long. 9° 28' W. During high tide it is entirely covered by the sea. The reef is about 850 yards in length, and 110 in breadth. A light-house is erected upon it. The light is 108 feet above the medium level of the sea. A bright and red light are exhibited every four minutes. Upon the rock there are also 2 bells, which in

thick foggy weather are tolled by machinery night and day, at intervals of half a minute. Prior to the erection of these bells this rock was the cause of many shipwrecks.

BELL TOWN, a large town on the Cameroons river, in Guinea. It is the residence of a native chief, and is accessible by merchant vessels, which anchor in the Cameroons river, close to the town. The houses are regularly and neatly built of bamboo.

BELLAC, a town in the department of Haute-Belle, Vienne, France; pop. 4,000. It has tanneries, paper-mills, and a foundry, cloth, linen, and hat manufactories.

BELLADONNA, literally, beautiful lady, a name given to several different plants, as to the *atropia hortensis*, *amaryllis belladonna*, and the *atropa belladonna*. The amaryllis is a lily of great beauty and blushing appearance. It grows wild at the Cape of Good Hope, and is well known in cultivated gardens in England and France. The name is also in common use for the medicinal extract of the atropa, and in the pharmacopœias for the leaves, and also for the root and leaves, from which the extract is obtained. This is a plant of the *solanaceæ* family, the qualities of which are better described by the name of Atropa, one of the Fates, whose office was to clip the thread of life, than by the specific name of belladonna, notwithstanding from it the Italians extracted a cosmetic for preserving the freshness of the skin. It is known by the common name of deadly nightshade. In England, Germany, and northern France, it is met with in shady places along the sides of the walls, flowering in June and July, and ripening its fruit in September. In this country it is successfully cultivated in gardens. It grows from 3 to 4 feet in height, with straight and strong stems. The leaves, of oval shape and pointed, are in pairs of unequal size; the flowers are large, bell-shaped, and of a dull violet-brown color. The fruit resembles a cherry, for which it is sometimes mistaken by children, with fatal consequences: it contains numerous seeds, and yields a violet-colored juice, of sweetish taste. All parts of the plant are highly poisonous. The leaves are most usually employed for the extraction of the alkaloid principle, though the root and berries also yield it to alcohol and water. For description of this substance, see **ATROPIA**. The juicy extract of the leaves expressed by trituration, and mixed with water, is the common medicinal preparation, known by the name of belladonna in this country; by the Dublin medical college the root is also used for the preparation. This extract is preferred to the alkali on account of the dangerously powerful properties of the latter. It is estimated that one hundred weight of fresh leaves will yield from four to six pounds of extract. It has been employed in medicine from early times, the leaves themselves being applied to heal tumors and ulcers. At present it is administered internally in preference, and is found to

be a powerful remedy in nervous diseases, neuralgia, hooping-cough, paralysis, rheumatism, and many other diseases. By the homœopaths it is highly esteemed as a preventive medicine to attacks of scarlatina. It has a powerful effect upon the eye, a few drops causing dilatation of the pupil, a property which renders it a highly useful application previous to the operation for the cataract. Dilatation usually comes on in about an hour; and increases for 3 or 4 hours, after which it continues for a day or two. It is also applied in cases of inflammation of the iris and opacity of the crystalline lens. The poisonous effects of the plant when taken by mistake, which is not an uncommon occurrence where it grows wild, are described as very distressing and terrible. They commence in about half an hour; but when the alkali is taken, in fifteen minutes. The throat becomes dry and parched, the power of swallowing is lost, nausea and ineffectual attempts to vomit succeed, the sight becomes dim, and the sufferer is thrown into a condition of vertigo and delirium like that of intoxication, making wild gestures, and uttering shouts of laughter, and at last falling into a state of lethargy. The pupil of the eye is dilated and sightless, the face red and swollen, and the mouth and jaws spasmodically affected. The most effectual antidote is the speedy use of the stomach-pump or emetics, followed by purgatives and injection. The infusion of galls is also recommended, and lime-water or the alkaline solutions are said to render the poisonous matter remaining in the stomach inert.

BELLAMONT, RICHARD, earl of, royal governor of New York and Massachusetts, to which offices he was appointed in May, 1695, but did not arrive in New York until May, 1698. He died in New York, March 5, 1701. He went from New York to Boston in May, 1699, and was received by 20 companies of soldiers and a vast concourse of people. He took every means to ingratiate himself with the people, and one of his biographies says by this means he obtained a larger salary than any of his predecessors had been able to get. Though but 14 months in the colony, the grants made to him were £1,875. His administration was uneventful, his time having been occupied in the pursuit of the pirates who infested the coast, one of whom, the notorious Kidd, he secured and sent to England in 1700. In the latter part of that year he returned to New York, where he contracted the disease of which he died. Hutchinson speaks of Bellamont as being a hypocrite in a pretended devotion to religion. It appears, however, that while living at Fort George, in New York, he passed much time in meditation and contrition for his youthful excesses. He was accompanied to America by his countess. New Hampshire he does not appear to have visited, though it was one of his governments.

BELLAMY, MRS. GEORGE ANN, English actress, born in London, April 28, 1783, died

at Edinburgh, Feb. 15, 1788. Her mother, who had been Lord Tyrawley's mistress, married Capt. Bellamy, who abandoned her on the birth of this child, which was born some months too soon to claim consanguinity with him. She was educated at a convent in Boulogne, from the age of 4 to 11, when she returned to England. Lord Tyrawley, her actual father, took notice of her, gave her a house near London, and introduced her to his own gay friends, whose conversation and example vitiated her mind. When Lord Tyrawley went on an embassy to Russia, he left her under the protection of a lady of rank, with an annuity of £100, so long as she held no intercourse with her mother, who had seriously offended him. Having gone to reside with her mother, she lost her annuity, and was renounced by her father. Having derived an inclination for the stage from her mother, who was an actress, she was introduced to Mr. Rich, manager of Covent Garden theatre, who, on hearing her recite some passages in Othello, engaged her as a performer. At this time she was 14, with a good figure, fine voice, graceful action, lively spirits, and handsome face. She appeared as Monimia, in the tragedy of "The Orphan," and her performance during 8 acts was dull and spiritless. In the 4th act (to use her own words) she "blazed out at once in meridian splendor." From that time her professional career was brilliant. In 1759, when Dodgley's "Cleone" was produced, Dr. Johnson attended, and wrote to Bennet Langton that it "was well acted by all the company, but Bellamy left nothing to be desired." After many alternations of fortune, a free benefit, given her by the players, in 1785, took her out of prison, to which she was remanded, for debt, in the following year. She died in want. She published an "Apology for her Life," in 6 volumes.

BELLAMY, JACOBUS, a poet of Holland, born at Flushing, Nov. 12, 1757, died March 11, 1786. He was bred in the trade of a baker, but his patriotic productions were so much admired that he was placed by a company of gentlemen at Utrecht, for education and to be provided for in the church; his genius, however, led him to continued poetical composition, imaginative and amatory. The *Vaderlandsche Gesangen* were collected and published in 1785.

BELLAMY, JOSEPH, D. D., a celebrated divine of New England, born in 1719, died March 6, 1790. He graduated at Yale college in 1735, and was ordained at Bethlehem, in Woodbury, Ct., in 1740. He remained in studious retirement until the famous revival of 1742, when, leaving his charge, he began, in the manner of the time, a constant and extensive course of preaching. A more than ordinary share of controversial learning, direct conviction, a ready delivery, and powerful voice, peculiarly fitted him for this office. After the religious interest had passed over, he returned to his parish and established a school of theological instruction, in which for many

years he educated numbers of attached pupils in the theory and practice of the ministry. Several sermons and treatises were published by him from 1750 to 1762, which, in 1811, were collected in 8 volumes, with a sketch of his life. His system of divinity coincides generally with that of President Edwards, with whom he was intimate.

BELLAMY, SAMUEL, a noted pirate, was wrecked in his ship, the *Whidah*, of 23 guns and 180 men, off Wellfleet, on Cape Cod, in April, 1717, after having captured several vessels on the coast. Only 1 Indian and 1 Englishman escaped of his crew. Six of the pirates, who had been run ashore when drunk a few days previous, by the captain of a captured vessel, were hung in Boston in Nov. 1717.

BELLARMIN (BELLARMINO ROBERTO), cardinal, born of a noble family at Monte Pulciano, near Florence, Oct. 5, 1542, died at Rome, Sept. 17, 1621. He was the nephew of Pope Marcellus II., and manifested the bright promise of his future greatness in childhood. It is said that once, when his mother took him to a church ornamented with paintings, representing the fathers and doctors of the church, he exclaimed, "One day I shall be one of these." Great care was taken with his early education, and at 18 he entered the society of the Jesuits. For several years he was occupied chiefly with study and instruction. The celebrated St. Francis Borgia, formerly duke of Candia, who succeeded Laynez as general, sent him to Louvain, to labor against the extension of Protestantism, by preaching and teaching theology. From this time, he became the most powerful and celebrated champion and controversial writer of the Roman Catholic church. Sixtus V. sent him with his legate to France, during the wars of the league, and after his recall he was employed in different offices at Rome. Clement VIII. decorated him with the Roman purple in 1599. During his brilliant career as the first theologian of the church, and as cardinal, Bellarmine continued to live a most simple, strict, and ascetic life. In 1603 he was made archbishop of Capua, where he resided and administered that see for a few years, after which he resigned it, and remained at Rome during the last 15 years of his life, wholly devoted to his duties as cardinal, and to the study of theology. At the conclave which followed the death of Clement VIII., he was a candidate for the tiara, and, at the subsequent conclave after the short reign of Leo XI., came within a few votes of the number requisite for an election. He exerted himself, however, to prevent it, and Cardinal Aldobrandini did the same, on the ground that the election of a Jesuit would offend the sovereigns. Cardinal Bellarmine remained, however, during his life, the most esteemed counsellor of the popes, and the ruling spirit of the college of cardinals.

BELLATRIX, the name of the smaller of the

2 bright stars in the shoulder of Orion. It is of the second magnitude. The name, Warrior-ess, is indicative of the supposed qualities of the spirit animating the star.

BELLAY, JOACHIM DU, a French poet, canon of Notre Dame of Paris, born near Angers, in 1524, died Jan. 1, 1560. He was a favorite with Francis I., with the queen of Navarre, and with Henry II. Though a priest, the license of the times allowed him to devote himself to a lady named Olive, on whom he wrote a collection of 115 sonnets, bearing her name, which he called his canticles. They were very successful. Du Bellay was called the French Ovid; and when afterward he published 188 sonnets entitled *Egrets*, and 47 on the antiquities of Rome, the public admiration extended across the channel, and was shared by the English Spenser. His contemporary Ronsard being known as the *prince de l'ode*, Du Bellay was spoken of as the *prince du sonnet*.

BELLE, JEAN FRANÇOIS JOSEPH DE, a French general, born at Voreppe, May 27, 1767, died in St. Domingo in June, 1802. He was made general in 1795; was in the Italian campaign of 1799, and on the fatal day of Novi, when, Joubert having fallen, the French army was forced to retreat, he directed the artillery. In 1801 he was in the army which sailed under command of Leclerc to reduce St. Domingo; he participated in the action which compelled Maurepas to capitulate; he soon after attacked the army of Dessalines, forced him to retreat, and pursued the fugitives into the fort of Orète-à-Pierrot. Many of the French perished under the artillery of this fortification, and De Belle himself, while advancing at the head of his column, was dangerously wounded, obliged to be carried from the field of battle, and survived but a short time.

BELLEHASSE, a county in the eastern part of Canada East, situated between the St. Lawrence and the state of Maine, and embracing an area of 1,088 sq. miles. Flax, hay, and oats are raised in considerable quantities, and the sugar-maple abounds in the forests. Woolen goods and leather are the chief manufactures. Pop. 17,982. Chief town, Berthier-en-bas.

BELLE-ISLE, or BELLISLE, STRAITS OF, an outlet of the gulf of St. Lawrence, between the coasts of Labrador and Newfoundland, lat. 52° N.; length, about 80 miles; breadth, 12 miles. Its navigation is considered to be hazardous. The Labrador side of this strait is indented with bays—Temple bay, Wreck cove, Green bay, Red bay, and Black bay. The opposite coast is devoid of indentations.

BELLE-ISLE, NORTH, an island at the mouth of the straits of the same name, between New Britain and the northern extremity of Newfoundland, 16 miles distant from the nearest part of the coast of Labrador. Its circumference is about 21 miles. On the N. W. side is a harbor for small fishing vessels, and a cove on the E. side affords shelter for shallops.—SOUTH

BELLE-ISLE is an island off the N. E. coast of Newfoundland, near the entrance to White bay.

BELLE-ISLE-EN-MER, an island in the bay of Biscay on the west coast of France, a little north-west of the mouth of the Loire, department of Morbihan, 8 ms. S. of Quiberon point. It is of an oblong form; length, about 11 miles; breadth, 6 miles. Its surface is about 160 feet above the sea, and treeless. The island is noted for its fine breed of draught horses. It has several druidical monuments. Pop. 10,000.

BELLENDEN, SIR JOHN, a Scotch statesman, born near the beginning of the 16th century, died in 1577. The name of his family is also spelled Ballenden and Bannatyne. The fact that he was a doctor of the Sorbonne makes it probable that he was educated in France. When the earl of Angus, prime minister of Scotland, was attainted in 1528, Ballenden was one of the few who adhered faithfully to him, and he drew up the defence, on the grounds taken in which the attainder was afterward reversed. He received the honor of knighthood in 1547, when he was made lord of sessions and director of the chancery, and upon the arrival of Queen Mary in Scotland in 1561 he was appointed one of the privy council. A zealous Catholic, he was one of those who sought to check the reformation by allowing smaller stipends to the Protestant clergy. He was involved in the commotions attending the murder of Rizzio, but obtained the favor of Mary and Darnley, and afterward joined the association against them. The troubles of the kingdom induced him to leave it for a time, and he made a visit to Rome, but returned and took part, 1573, in framing the pacification of Perth. He wrote a few poems, and translated into the vernacular tongue the Scottish history of Boethius.

BELLENDEN, WILLIAM, a Scottish writer of the 17th century, the time of whose birth and death is uncertain. He is famous for pure Latin-ity, and was educated at Paris, where he became professor of belles-lettres, and continued to reside, though he was invited to Scotland by James I. before the latter succeeded to the English crown. He collected in 1616 three treatises, which he had published before separately, under the title of *Bellendenus de Statu*. The first of these was entitled *Ciceronis Principes*, &c., or *De Statu Principis et Imperii*; the second was *Ciceronis Consul, Senator, Senatorque Romanus*, or *De Statu Reipublice*; and the third was *De Statu Prisci Orbis*. In the first 2 portions he collected from the writings of Cicero all the passages which had reference to the nature of political government, the authority of consuls, and the constitution of the senate among the Romans, and the last portion was a condensed history of the progress of religion, philosophy, and civil polity from the times before the flood, under the Hebrews, Greeks, and Romans, to the age of Cicero. This work was republished in 1787 by

Dr. Parr, who prefixed to it a long introduction in a style of elegant and powerful Latinity which could be equalled by few modern scholars, and which was remarkable for its fierce invective against eminent contemporary statesmen. The greatest labor of his life was an elaborate and learned work, *De tribus Luminibus Romanorum*, in which he designed to treat of the character, literary merits, and philosophical opinions of Cicero, Seneca, and Pliny. Only the first part was finished, in which he combines in a historical form all the statements and reflections of Cicero which relate to the civil and religious affairs of Rome; and he intersperses observations in such a way as to make the whole a careful display of the original sources of Roman history from the foundation of the city to the beginning of the empire. This work was precisely such a digest as Dr. Middleton in his "Life of Cicero" professed to have formed by his own unaided industry. But few copies of Bellenden's work existed in England, yet it is hardly probable that so well read a scholar as Middleton, who was familiar with public libraries, could have avoided seeing it, and therefore knowing that his own labor of collecting and digesting would be entirely superfluous. Dr. Middleton was, therefore, repeatedly accused of plagiarism, among others by Dr. Warton and Dr. Parr.

BELLEROPHON, a hero of Grecian mythology, whose real name was Hipponous, was a son of Glaucus, king of Corinth, and Eurymede. He received the eponym of Bellerophon in consequence of having slain a Corinthian eunatrid named Bellerus. After this crime he fled to Proetus, king of Argos, to get himself cleansed from the pollution of blood. The wife of Proetus became desperately enamored of him, but Bellerophon received her advances so coldly that she grew exasperated, and, accusing him to her husband of having made insulting offers to her, she insisted that he should be put to death. Proetus not wishing to violate the laws of hospitality by slaying a man who was his guest, despatched him with a letter to Iobates, king of Lycia, in which that potentate was charged to have Bellerophon killed. Iobates hereupon sent him to combat the winged horse, Pegasus, with the aid of Minerva, and then mounting him, soared into the air and slew the monster from on high. Iobates next sent him to encounter the Solymi and the Amazons, but the hero still proved victorious. Lastly, Iobates placed a band of the bravest Lycians in ambush to attack him on his return. This device, however, was fruitless, for Bellerophon slew them all. The Lycian monarch now perceiving that he was invincible, revealed to him the contents of the letter which he had brought from Proetus, gave him his daughter Cassandra in marriage, and made him heir to the throne of his kingdom. The latter days of Bellerophon were unfortunate. Attempting to soar to heaven on the back of Pe-

gasus, Zeus sent a hornet which so stung his winged steed, that he cast his rider to the earth, where lame and blind he wandered lonely in the Aleian fields, a prey to corroding grief and melancholy, shunning men, and hated by the gods.

BELLES-LETTRES (Fr.), beautiful or polite literature, a term of mediæval origin and vague import. Letters were revived in the fantastic age of chivalry, and the knights and princes of that time looked upon learning with something of the hallucination with which they regarded women, adventures, the Turks, and the dragon. Of science or of erudition they had no proper conception, and they thought that the whole array of learning, history, philosophy, mathematics, languages, geography, and astronomy, was designed only as an aid in writing a sonnet or a song. Literature was thus associated with the wild romance of the period, and the romantic epithet of beautiful, then much in vogue, was applied to it, making it in Italian *belle lettere*, and in French *belles lettres*. Ecclesiastical learning, however, which had never quite departed from the cloisters, did not join the general revelry of letters in celebrating the ideas and deeds of chivalry, but kept its pristine dignity, and amid songs, and ballads, and romances, gravely discussed exegesis and history. Thus literature was divided into theology and belles-lettres. The latter term, after the attainment of sounder views of the uses of learning, received a less comprehensive meaning, and was applied indefinitely to those departments of literature which minister to the taste and the fancy in distinction from those which are more palpably useful. It was used as descriptive of the attainments of a person who pursued learning, not thoroughly and with a scientific spirit, but with ideas resembling those which were prevalent at the period of the renaissance. In this sense it has retained a precarious existence in the English language, in which it was borrowed from the French, but the fact that the term now conveys no definite meaning has rendered its use nearly obsolete. The topics which it once embraced fall now under the heads of poetry and literature.

BELLEVAL, PIERRE RICHIER DE, a French botanist, born at Châlons-sur-Marne, in 1558, died at Montpellier, in 1638. Henry IV., learning that the medical students of France were accustomed to complete their education in the universities of Italy, where the professors had botanical gardens under their charge, founded by royal edict in 1598 a botanical garden at Montpellier, in which he appointed Belleval a professor. Belleval published many botanical treatises, and is regarded as one of the founders of the science of botany, since he was among the first to consider plants according to their general characteristics without regard to their medicinal properties. He had 400 plates engraved, which were praised by Tournefort and Linnæus, but have been nearly all lost.

BELLEY, a town of France, in the depart-

ment of Ain; pop. 4,879; 88 miles S. W. from Geneva, agreeably situated in a fertile valley near the Rhone, which is here crossed by a suspension-bridge. It is the ancient *Bellica*, was a place of note in the time of Julius Cæsar, and is now the seat of a bishopric which was founded in 412. It was burned by Alaric in 390, was possessed by the dukes of Savoy during the middle ages, and was ceded to France in 1621. Its episcopal palace, the belfry of the cathedral, and its cabinet of medals and antiquities, are now its most remarkable objects. Lithographic stones, esteemed the best in France, are obtained from neighboring quarries.

BELLINGHAM, RICHARD, royal governor of Massachusetts, born in 1592, came to the colony in 1634, and died Dec. 7, 1672. In 1635 he was made deputy-governor, and in 1641 was elected governor in opposition to Winthrop by a majority of 6 votes. The election, however, appears to have displeased the general court. He was reelected in 1654, and after the death of Endicott was chosen again in May, 1666, and continued in the executive chair of the colony as long as he lived, having been deputy-governor 13 and governor 10 years. He was chosen major-general in 1664, in which year the king sent Nichols, Cortright, Coon, and Moresick as commissioners, to inquire into the state of the colony, when, according to Hutchinson, Bellingham, and others obnoxious to James II., were required to go to England to account for their conduct. The general court, however, refused obedience, and maintained the authority of the charter. His wife having died, in 1641 he married a second time, of which a contemporary speaks thus: "A young gentleman was about to be contracted to a friend of his, when on a sudden the governor treated with her, and obtained her for himself." The banns were not properly published, and he performed the marriage ceremony himself. He was prosecuted for a violation of the law, but at the trial he refused to leave the bench, but sat and tried himself, and thus escaped all punishment. In his last will he provided that after the decease of his wife and of his son by a former wife, and his granddaughter, the bulk of his estate should be spent for the yearly maintenance "of goodly ministers and preachers" of the true church, which he considered to be that of the Congregationalists. This will the general court set aside on the ground that it interfered with the rights of his family. A sister of his, Anne Hibbens, was executed at Salem in June, 1656, during the witchcraft persecution.

BELLINI. I. JACOPO, one of the early painters of the Venetian school, born in Venice about 1405, died in 1470. He was a pupil of Gentile da Fabriano, and is said to have been taught oil painting, which was then a secret, by Andrea dal Castagno, and in turn, taught it to his sons, Gentile and Giovanni. The first works by which he acquired fame were portraits of Catharine Cornaro, the beautiful queen

of Cyprus, and one of her brothers; a picture representing the passion of Christ, in which many figures were introduced, himself among the number; and a historical picture representing a Venetian legend of the miracle of the cross. This cross, containing a piece of the true one, on which the Saviour died, was by some accident thrown into the grand canal at Venice, and although many persons plunged in after it, it was the will of God that only the guardian of the brotherhood to whom the cross belonged, Andrea Vindramino, could take it out again. This event was represented in the painting. Almost all of Jacopo's works have perished; one supposed to be authentic is in the Manfrini palace at Venice, and represents the portraits of Petrarch and Laura. **II. GENTILE**, the elder son of the preceding, born in 1421, died in 1501. He became much more distinguished than his father, but did not rival his younger brother, Giovanni. The most affectionate intercourse existed between the brothers, who mutually aided each other. Gentile was employed by the Venetian government on an equal footing with his brother, in decorating the hall of the grand council in the doge's palace, and was also celebrated for his portraits, although his manner was rather hard. His fame attracted the notice of Mohammed II., conqueror of Constantinople, and Bellini visited the grand seignor, being sent by the senate. He painted a number of pictures for Mohammed, and also struck a medal for him, with all of which he was greatly pleased, and rewarded the painter by presenting him with a gold chain and 8,000 ducats. A story is told of his exhibiting to Mohammed a picture he had painted of the head of John the Baptist in a charger, and the emperor, who had certainly great experience in decapitation, observing that the muscles of the neck were not correctly drawn, sent for a slave and had his head cut off in the presence of the artist, to convince him of his mistake. Voltaire ridicules this tale, and Gibbon altogether rejects it. There is a very fine pen and ink drawing by Bellini in the British museum, representing Mohammed and the sultana mother, in whole length figures in a sitting position. After Gentile's return to Venice, he continued to paint, honored by the patronage of the state and of private individuals, until his death. **III. GIOVANNI**, second son of Jacopo, and generally regarded as the founder of the Venetian school, born in 1426, died in 1516. Some of his earliest works were portraits, among them that of the doge Loredano. Having attracted the notice of the government, he was employed by the republic to decorate the great hall of the council with a series of magnificent paintings, covering the entire walls, and designed to represent the proudest historic glories of Venice. These were worthily accomplished, but were destroyed by a great fire, in 1577. Beside these noble works of art, which occupied many years of Giovanni's life, he painted a picture of the Virgin Mary, sur-

rounded by saints, for the church of San Zaccaria, in Venice, which is still in its place and in good preservation, having been carried off to Paris, by Napoleon Bonaparte, and returned in 1815. There is another of the same subject at Castle Howard, the seat of the earl of Carlisle, and this Dr. Waagen declares to be the original work, in his "Art Treasures of Great Britain." Many more of his paintings are preserved in Venice, and other cities, several of which are in the galleries of Berlin. One of his last works was a Bacchanal; this he left incomplete, and it was finished by Titian. He has the honor of having taught 2 of the greatest of the Venetian painters, Titian, already named, and Giorgione. His coloring was of the same rich and voluptuous character; they only excelled him in grace and freedom of drawing. Giovanni Bellini died of old age, at the age of 90, and was buried in the same tomb with his brother Gentile, in the church of San Giovanni e Paolo. IV. LAURENTIO, an Italian anatomist, born at Florence, Sept. 8, 1643, died Jan. 8, 1704. He was patronized by the grand duke Ferdinand II., by whose aid he repaired to the university of Pisa, where he studied under the most distinguished masters of the time, being instructed in mechanics by Borelli, whose teachings he subsequently made great use of, in explaining, by mechanics, the phenomena of the living body. His acquirements were such that at 22 he gained the chair of philosophy and theoretical medicine. He held the chair of anatomy for over 80 years, and was regarded as a very brilliant professor, his lectures frequently securing the attendance of the grand duke. When 50 years of age, he abandoned his professorship, and returned to Florence. He made several valuable discoveries in anatomy, and wrote many works on medical subjects, as well as poems and discourses. V. VINCENZO, one of the most popular composers of modern times, born at Ostania, in Sicily, Nov. 1 or 3, 1806, died Sept. 23, 1885. Before he was 20 years of age, he produced an opera at San Carlo, entitled *Bianca e Fernando*. In the following year, he wrote for La Scala, at Milan, *Il Pirata*, which had immediate success, and *La Straniera*. He produced *La Sonnambula* at Naples, and this opera still maintains its great popularity. He successively wrote *I Capuletti ed i Montecchi*, which was first performed in Venice; *Norma*, which appeared at Milan, and *I Puritani*, for the Theatre Italien, in Paris. Nearly all his works are still frequently performed, and are of a character to charm a wide variety of the lovers of music. There is an exquisite sweetness and pathos in his compositions, which win upon the great mass of listeners.

BELLMAN, KARL MICKEL, a Swedish poet, called the Anacreon of Sweden, born at Stockholm, Feb. 4, 1740, died Feb. 11, 1795. He published religious poems, and a translation of the fables of Gellert, but acquired renown only by the songs which he was accustomed to im-

provise at banquet-tables. Associated with the most brilliant and dissipated young men of the capital, he would pass the entire night singing improvisations to his friends, accompanying himself with the guitar, till he would fall down fainting. The best of his verses are thought never to have been written, but to have passed away with the joyous moment which gave them birth. The songs and idyls, which he published under the title of "Letters to Fredman," are peculiarly naïve, tender, and charming. His longest poem, the "Temple of Bacchus," is of an elegiac character, and marked by depth and brilliancy of thought. In 1839, a monument was erected at Stockholm, in honor of his genius, and a society named after him, the "Bellman," celebrates there an annual festival in his memory.

BELLOC, ANNE LOUISE SWANTON, a Frenchwoman of letters, born at La Rochelle, Oct. 1, 1799, the daughter of an Irish officer in the French service, named O'Keefe. She has earned an honorable livelihood by translating English and American works into French, and by writing educational works for the young, in which she is assisted by Mlle. Montgolfier, the daughter of the celebrated aeronaut. She has introduced to French readers the moral tales of Miss Edgeworth, several of Thomas Moore's poems, the travels of the two Landers in search of the course of the Niger, Goldsmith's "Vicar of Wakefield," Miss Sedgwick's writings, and an essay of Dr. Channing, to which she prefixed an original life of the author. Her last work of which we have information, is a translation of Mrs. Stowe's "Uncle Tom's Cabin."

BELLONA, the Roman goddess of war. She is sometimes styled the colleague, sometimes the sister, sometimes the wife, of Mars. She was worshipped as the deity whose peculiar province it was to inspire mortals with invincible valor and enthusiasm. Her temple stood in the Campus Martius, near the circus of Flaminus, and was of great political importance in the days of the republic. The priests of Bellona were called Bellonari, and as often as they sacrificed to their goddess they were obliged to lacerate their arms or legs, that they might be able to offer upon her altar a portion of their own blood. The humanity of later times, however, did away, in a great measure, with this practice. The 24th day of March in every year was the principal day of her worship, and that day was distinguished in the Roman Fasti by the title of *dies sanguinis*.

BELLOT, JOSEPH RENÉ, a French naval officer, born in Paris, March, 1826, lost off Cape Bowden, Aug. 18, 1853. He was a midshipman in the siege of Vera Cruz in 1838, and a lieutenant in 1851, when he obtained permission to serve as a volunteer in the English expedition sent out in search of Sir John Franklin, and commanded by Captain Belcher, R. N. The bravery and good conduct of the young man were remarkable, and a strait which he discovered has been named after him. On his return

home he again sought and obtained leave to join the Inglefield expedition. On one occasion, when Inglefield was absent, he offered to carry some despatches to Sir Edward Belcher, by a journey over the ice. Being overtaken by a storm, the ice on which he was, with 2 of his companions, was severed from the land. He went to the other side of the hummock to reconnoitre, and was never seen again. A monument to his memory has been erected at Greenwich hospital. His own diary, which was published in 1855, furnishes the best narrative of his adventures and enterprises.

BELLOWS, an instrument contrived for propelling air through a pipe. It is employed for blowing fires, supplying air to ventilate mines, filling the pipes of an organ with wind, and for other purposes. The use of this apparatus may be traced back to a very early period. It is spoken of by Jeremiah, vi. 29, and by Ezekiel, xxii. 30. When Homer describes the forging of the iron shield of Achilles, he speaks of the furnace into which the materials were thrown being blown by 20 pairs of bellows (*φύσαι*). From the remarks of Plautus in his *Fragmenta*, and of Virgil in the *Georgics*, it would appear that bellows of the ancients were made wholly of leather. The first account we have of wooden bellows is by Henry, bishop of Bamberg, in Bavaria, in 1620, when one named Pfannenschmidt (bellows smith) commenced the manufacture of them in the Hartz forest, and by his success excited the jealousy of those of the same trade in the place. His art was disclosed only to his son, and during the present century his great-grandson had still the monopoly of the forest. These data are furnished by Professor Alexander, of Baltimore, in his report upon the manufacture of iron. He is disposed, however, on the authority of Beckmann, to give the credit of their invention to Hans Loisinger, an organist, of Nuremberg, in 1550. Among many primitive nations of Asia and Africa, this machine is still employed in its simplest form for blowing by hand the fires of rudely constructed furnaces, probably of the same form as those in use in the times of Homer and of the Jewish prophets. As ordinarily constructed, the instrument consists of two similar plates of wood connected by a strip of leather fastened around their edges, which with the plates completely encloses a chamber for air, and is so made that the plates may be made to approach and recede by folding and unfolding the leather. In the lower plate is fixed a valve opening inward, through which the air enters as the plates are separated, and which closes as they are brought together, forcing the air to seek some other outlet. This is provided in a tube of small area compared to that of the valve, so that the air is made to rush outward with great velocity. As the action of this machine is to give an intermittent blast, it has been improved by introducing a third plate, attached to the lower one as this was the upper, thus making a double bellows. The two

lower plates have valves opening upward, and the pipe or nozzle for the exit of the air is in the upper of the two chambers. The middle plate is worked up and down by a lever arm, and weights are placed upon the top of the bellows to force out the air continuously, and others are suspended from the bottom board to keep the lower chamber distended with air. A circular form is sometimes given to the plates or boards, and the air chamber surrounded by the leather is cylindrical. When shut together, it is very compact and portable, which renders it a convenient form for portable forges. The inhabitants of Hindostan make use of such bellows for blowing their small iron furnaces. A man sits down between two of them, and with one hand upon each works them alternately up and down, producing a tolerably continuous blast, but of small capacity and force. The Chinese bellows is a simple contrivance for forcing air with any desired pressure, and is upon the same principle with the large blowing machines now in general use. It is a square wooden box or pipe, with a piston-rod working in one end, and carrying a closely fitting piston, by the movement of which the air is pushed through a smaller pipe in the other end. On the reverse motion the air enters through valves and refills the box.—The useful effect of the bellows is in exciting combustion, by furnishing a continuous stream of oxygen in the fresh supplies of air, and in removing by the force of the blast those products of combustion which ordinarily exclude the approach of the air and impede the continuation of the process. Its power of rapidly exciting vivid combustion and intense heat is well seen in the action of the smith's bellows in common use. Excepting for some small operations for metallurgic purposes, and for other objects not requiring either a large volume or great pressure of air, the ancient bellows is now for the most part replaced by more efficient apparatus, as the so-called blowing machines and fan-blowers, descriptions of which will be found under **BLOWING MACHINES**.

BELLOWS, HENRY WHITNEY, D. D., an American clergyman, pastor of All Souls' church in New York, born in Boston, June 11, 1814, graduated at Harvard college in 1832, entered the divinity school at Cambridge in 1834, where he completed his course in 1837. He was ordained pastor of the first Congregational church in New York, Jan. 2, 1838. He was the principal originator of the "Christian Inquirer," a Unitarian newspaper of New York, in the year 1846, and was the principal writer for its columns until the middle of 1850. His publications consist chiefly of pamphlets and discourses, perhaps 25 in number, the most conspicuous of which are his "Phi Beta Kappa Oration," 1853, and his noted defence of the drama, 1857. In 1854 he received the degree of D. D. from Harvard university. He continues pastor of the parish over which he was first ordained, although his people have twice chang-

ed their place of worship, and now occupy the edifice known as All Souls' church. He is a ready extempore speaker and a popular lecturer. His tastes and convictions lead him to intimate relations with artists, and engage him often in questions of a social and philanthropic character. He has spoken and published his views freely upon the prominent topics of the day, and inclines to deal with current interests rather than with scholastic studies. His occasional contributions to the reviews, and especially the "Christian Examiner," are marked by independence of thought and boldness of expression. The latest work which has brought him prominently before the public is his course of lectures on the "Treatment of Social Diseases," delivered before the Lowell institute in Boston, in 1857.

BELLOWS FALLS, a village in Rockingham township, Windham co., Vt., on the Connecticut river, so called from several rapids and cataracts occurring there. The whole descent is about 44 feet. These are the falls concerning which Peters, in his history, relates that the water becomes so hardened by pressure between the rocks, that it is impossible to penetrate it with an iron bar. It was formerly a famous place for spearing salmon from the rocks, as they attempted to force a passage. A canal with locks has been cut around the falls, through the solid rock. The river is here crossed by a bridge, 212 feet long, built in 1812. The scenery is romantic, and various interesting minerals are found in the vicinity. The village contains several mills and manufactories, and is remarkable for its handsome dwellings.

BELLOU, PIERRE DE, a French jurist and politician, was born at Montauban, in Brittany, about 1540; the date of his death is unknown. He espoused the cause of Henry IV., against the league; and having given great offence to the Guises by a work which he published in 1584, asserting the king's independence of the pope, he was arrested and thrown into the Bastille, where he was imprisoned 2 years, when Henry IV. appointed him advocate-general to the parliament of Toulouse.

BELLUNO (anc. *Bellunum*, or *Belunum*), a walled city in the north of Italy, on the river Piave; pop. 10,700. It contains a cathedral planned by Palladio, several churches, a hospital, schools, and a public library, and is supplied with water through a fine aqueduct. Large fairs are held here in February and April, and the inhabitants are extensively engaged in the manufacture of silk, leather, earthenware, and hats, and in the timber trade with Venice. The title of duke of Belluno was conferred by Napoleon on Marshal Victor.

BELMAS, Louis, bishop of Cambrai, France, born Aug. 11, 1757, at Montréal, in Aude, died July 21, 1841, at Cambrai. By rendering allegiance to the civil power he drew upon himself the condemnation of Rome, and even after retracting, on occasion of the coronation of Na-

poleon, his oath to the constitution, he failed to regain the confidence of the Vatican. On this account Cambrai did not become an archbishopric during his life. In 1841 he created a sensation among the journalists of Paris, by his charge to the clergy on the question of the obligations due to political authorities. He was the last bishop of France, previous to the now existing concordat.

BELMONT, an eastern county of Ohio, separated from Virginia by the Ohio river, and covering an area of 520 square miles. Indian, Wheeling, Captina, and McMahon creeks are the principal streams. The surface is uneven, frequently rising into hills, and the soil is excellent. Coal is found in large quantities. Cattle and horses are raised in great number. In 1850 the agricultural products amounted to 854,771 bushels of corn, 859,839 of wheat, 860,040 of oats, 16,897 tons of hay, 1,652,598 lbs. of tobacco, and 612,238 of butter. There were 74 churches, 8 newspaper offices, and 4,008 pupils in the public schools. Pop. 34,600. Capital, St. Clairsville.

BELMONTE, or **BELMONT**, a village in La Fayette county, Wisconsin, and formerly the seat of the territorial government. In the vicinity of this place 3 mounds, about 100 feet in height, rise up from the prairie; one of them is called the Belmont mound.

BELMONTE, or **Rio Jequitinhonha**, a river in the province of Bahia, Brazil. It is formed by the confluence of the Araguahi and Jequitinhonha, flows N. E., and empties into the Atlantic.

BELMONTET, Louis, a French literary man, born at Montauban in 1799. In 1830 he edited the *Tribune* newspaper, opposed the accession of Louis Philippe, and predicted his downfall and a second revolution in a bold pamphlet addressed to Chateaubriand, for which he was arrested. In 1839 he established, together with Messrs. Lafitte and Mauguin, a manufactory, in which the men were to share the benefits with the employers. In Feb. 1851, he was accused of having planned a Bonapartist movement against the legislative assembly, but the charge was abandoned. He occupied the position of superintendent of the Tontine from 1842 to 1852, when he became a member of the legislative assembly. He is the author of many fiery republican odes, and a volume of philosophical poems entitled *Les nombres d'or* (1846) was characterized by Béranger and Lamennais as a *bréviaire des belles âmes*. In his youth he became a member of the carbonari association. When Napoleon's remains arrived at Paris, he received from the prince de Joinville a piece of the coffin, in acknowledgment of the verses addressed to him on that occasion. In 1836 Louis Napoleon stood godfather to his first-born son, and among his latest productions is a *cantate Napoléonienne*.

BELOE, WILLIAM, an English clergyman and author, born at Norwich, in 1756, died April 11, 1817. His friends discovering in him evi-

dences of superior talent, he was sent to Dr. Samuel Parr, then principal of an academy in Middlesex, and graduated at Cambridge in 1779. He then assisted Dr. Parr in a school at Norwich. Soon after he obtained the curacy of Earlham, and afterward became vicar. Finding the income derived from his employment insufficient, he removed to London, and for several years occupied himself by writing for the periodicals of the day. During the American revolution he used his pen freely in the cause of the colonies; but in the French revolution he advocated other views. In company with Archdeacon Nares, he commenced the publication of the "British Critic," in which he acknowledged the fallacy of his previous opinions. In 1804 he accepted the assistant librarianship of the British museum, which he held but a short time, being deprived of it on account of a loss sustained by the institution through his mistaken kindness to an unworthy applicant. He published several translations from the Greek and Latin, beside a great variety of miscellaneous productions. His translation of Herodotus (4 vols. 8vo, 1791) retains its reputation to the present day.

BELOIT, a township and village of Rock county, Wisconsin. The village of Beloit, situated on the left bank of Rock river, and very near the southern boundary of the state, was settled about the year 1837, and incorporated in 1845. It is built on a beautiful plain, from which the ground rises abruptly to a height of 50 or 60 feet, affording excellent sites for residences. It is the seat of Beloit college, founded in 1846, and is noted for its broad, handsome streets, and for its fine churches; the Congregational church, constructed of gray limestone, is said to be one of the most beautiful in the state. The village is well supplied with water power, has a flourishing trade, and, in 1855, contained several manufactories of woollen goods, of reapers and fanning mills, of scales, of carriages, an iron foundry and machine shop, 8 flouring mills, beside 1 or 2 newspaper offices, several seminaries, 8 hotels, a bank, and more than 40 stores. It is the point of intersection of 2 railroads, the Racine and Mississippi, and the Beloit and Madison, the former of which extends from Lake Michigan to Rockton in Illinois, and the latter from Madison, the capital of Wisconsin, to the Galena and Chicago railroad, 18 miles beyond Beloit. A fertile prairie, the largest in the state, lies on the eastern side of Rock river. Pop. in 1855, 4,247.

BELOOCHISTAN, or BELUDHISTAN (anc. *Gedrosia* and *Drangiana*), a country of Asia, between lat. 24° 50' and 30° 20' N., long. 57° 40' and 69° 18' E.; bounded N. by Afghanistan, E. by Sinde, S. by the Indian ocean, and W. by the Persian desert; area about 160,000 sq. m.; capital Kelat; pop. 2,700,000. The general aspect of the country is mountainous; but toward the shore of the Arabian sea on the south, and toward Persia on the west, there are extensive

districts of barren plain. The Hala mountains on the E. and N. E., running from the mouths of the Indus to the Solymán mountains, include a quantity of comparatively fertile land, of valley and upland plain, in which the inhabitants raise the grains and fruits of a tropical climate; but the remainder of the country is a wilderness, unfit for habitation. A strip of land to the east of the Hala chain, which, although within the Indus valley, belongs to Beloochistan, is very fertile, growing cereals and rich crops of jowarree (a grain much in demand in northern India), and various tropical productions. But the land here is low and swampy, to which indeed it owes its fertility, and though more numerous inhabited than the other regions, is the most unhealthy of the whole. On the N. E. boundary are situated the famous mountain passes, the Bolan and the Molan or Gundwana pass. These are the direct road to Kelat and the only means of communicating with the interior of the country from the plains of N. W. India. The eastern provinces or districts are Sarawan, Kelat, Cutch-Gundava, and Jhalawan. On the south along the seashore is the district of Loos, and on the west Mekran, the ancient Gedrosia. The inhabitants of Beloochistan consist of 2 great varieties, the Belooches and the Brahooes, which are subdivided into other tribes, and these again into families. Their origin is uncertain, but they are probably a race of mixed Tartar and Persian descent. They themselves claim to belong to the earliest Mohammedan conquerors of central Asia, and are zealous Soonnees, tolerating an unbeliever, rather than a Sheeah. Polygamy is allowed. In their nomadic habits they closely resemble Tartars or Bedouins, living in tents of felt or canvas, and wearing a woollen cloth on their heads, with woollen or linen outer coats. Their women enjoy a share of freedom. They are of spare but active forms, practise arms and warlike exercises for amusement. The Brahooes speak a dialect more resembling those of the Punjab, and are shorter and stouter built than the Belooches. They have a somewhat better character in the matter of rapine and plunder than the others. They are said to be hospitable and observant of pledges and promises. The government is under various heads, of which the khan of Kelat is leader in time of war, and a kind of feudal chief in peace. Formerly Beloochistan was subject to Persia and afterward to Afghanistan, but in the latter part of the last century the tribes shook off their dependence on the Afghans. At the time of the British expedition into Afghanistan the British forced the Bolan pass. The Belooches harassed the troops considerably; and in 1840 an expedition was sent against Kelat to chastise them, which was done effectually, but no permanent occupation was made.

BELP, a Swiss village, canton of Bern. On the south side of the village is the Belpberg, a mountain 2,940 feet high, remarkable for its numerous petrifications.

BELSHAM, THOMAS, an English Unitarian divine and author, born in Bedford, April, 1750, died at Hampstead, Nov. 11, 1829. His father, who was a dissenting minister, educated him at the dissenters' academy, at Daventry, of which institution he became principal in 1781, holding the office for 8 years, and also preaching at Daventry. In 1789, abandoning the Calvinistic belief, he became minister of a Unitarian congregation, and settled in 1805 as pastor of Essex-street chapel, London, where the remaining 24 years of his life were spent. Mr. Belsham wrote a great deal in assertion and vindication of Unitarianism, including a reply to Mr. Wilberforce's "Practical View;" "Evidences of the Christian Revelation;" and a "Translation of the Epistles of Paul the Apostle, with an Exposition and Notes." Among his contributions to general literature, his "Elements of the Philosophy of the Human Mind and of Moral Philosophy" (in which, with David Hartley, he resolves all mental phenomena into the association of ideas), is best known.—**WILLIAM**, a historical writer, and brother of the above, was born in 1752, and died Nov. 17, 1827, at Hammersmith. He was a whig in politics, and well acquainted with the leaders of that party. In 1789 he commenced his literary course by publishing, in 2 vols., "Essays, Historical, Political, and Literary." To these succeeded essays on various subjects, chiefly political, and several works which appeared between 1798 and 1801, and were finally reproduced in a collective edition of 12 vols. octavo, in 1806, as a "History of Great Britain to the Conclusion of the Peace of Amiens." This large work, tinged throughout with a liberal spirit, somewhat rare at the period it appeared in, abounds in facts industriously collected, though not very felicitously reproduced in the author's own words.

BELSHAZZAR, the last king of the Chaldean dynasty. At his court the prophet Daniel was a favorite during the captivity. His dreams and the hand-writing on the walls of his palace, interpreted by Daniel, are familiar, as well as the tragic end of his kingdom (B. C. 538), conquered by the Medes and Persians under Cyrus.

BELSUNCE, HENRI FRANÇOIS XAVIER DE, a celebrated French Jesuit, born in Perigord, Dec. 4, 1671, died at Marseilles, June 4, 1755. At an early age he became a member of the order of Jesuits, was made grand vicar of Agen, and in 1709 bishop of Marseilles. During the pestilence which devastated his see in 1720-'21, Belsunce was untiring in his devotion, and displayed charity and unselfishness to a degree that drew upon him the encomiums of all Europe. He is especially referred to in Pope's "Essay on Man." In consideration of his services at this period, he was offered the bishopric of Laon, and also the archbishopric of Bordeaux, but refused both, preferring to remain with those to whom he had so long rendered himself necessary. In his later years he

became involved in disputes with the Jansenists, whom he attacked with much zeal. He founded a Jesuit college which bears his name; he published several writings against Jansenism.

BELTEIN, or **BELTANE**, a kind of festival, still celebrated in parts of Ireland and Scotland on the 1st of May, and supposed to be as old as the remotest period of druidical supremacy. The name signifies the fire of Bel or Baal, and the custom was probably an offshoot and remnant from the oriental worship of Baal, or the sun. To the beltein may be referred the practice of lighting fires on midsummer eve in England, in honor of the summer solstice.

BELTIRS, a small tribe of Tartars, dwelling in Siberia, along the banks of the Abakan. They are a barbarous and heathen race, never burying their dead, but suspending them from trees in secluded places. Their practice of polygamy, and their refusal to abandon it, is said to have been the chief obstacle to their conversion to Christianity.

BELTS. In machinery, belts of curried leather passing over metal or wooden pulleys are used instead of gearing, when the shafts to be connected are far apart. Belts are in general used between parallel shafts, and when it is requisite that the shafts should turn in opposite directions the belt is crossed. The diameters of the pulleys are made in the inverse ratio to the number of revolutions desired. In some machines it is necessary to modify the velocity of a shaft without stopping the motion; in such cases conical drums are substituted for pulleys, the apex of each drum being opposed to the basis of the other, so that the belt once out of the proper length to embrace both drums in their central parts answers for all the other portions of the drum. The belt in this arrangement has to be guided by a fork. When the shafts are not parallel, and their axes produced intersect each other, the only way to connect them by belts is to use a third shaft, with which both are connected. When the shafts are neither parallel nor in the same plane, they can be connected by a belt, but there is only one place on each shaft for the pulleys. These must be at the ends of a straight line perpendicular at the same time to both axes. There is only one such line. This theoretical place has to be corrected in each particular case according to the diameters of the pulleys, by taking care that the belt arrives square on each pulley, no matter how obliquely it leaves the other. As a consequence of this unavoidable correction, the motion of the shafts cannot be reversed without keying the pulleys in other places.—Belts are made of leather, India-rubber, iron wire, or gutta percha. Leather is in general use, and considered the most economical, but it must be well protected against water and even moisture. A careful attendant will make a belt last 5 years, which otherwise would last but 1 or 2. Millions are yearly wasted in this way by carelessness. India-rubber is praised by a few manufacturers and con-

demned by a larger number, but it is evidently the proper substance for belts exposed to the weather, as it does not absorb moisture, and consequently does not stretch and decay. Iron wire has been experimented upon, and promises well, but it requires a peculiar construction of pulleys, which has not as yet been perfected. Gutta percha has been used during the last 4 years at the zinc factory of *La Vieille Montagne*, in Belgium, and is spoken of very favorably. A company is now introducing the manufacture of gutta percha belts into the United States. The 2 ends of a belt may be united together by riveting, or by clamps of various construction, but the best way is to cut small holes through the ends, and to lace them together with a strap of leather.—In designing a machine, the width of the belt, the diameter of the drums or pulleys, and the velocity, have to be determined, and there is no generally admitted rule for doing this. Some engineers believe that the friction of a belt on a pulley follows the general laws of friction, and depends only upon the tension of the belt; according to their view, a belt will not slide more easily on a small pulley than on a large one. Others, having remarked that a belt slides more easily on a rough cast than on a turned pulley, think that in the latter case the air is excluded, and that the belt is pressed against the pulleys by atmospheric pressure to the amount of about 8 lbs. to the square inch, and thence it follows that the adhesion is proportional to the extent of the surfaces in contact, or to the diameter of the pulley. According to the first theory, the tighter a belt the greater the friction; according to the second, tightness has little effect beyond a certain point. It has been found in practice that belts must not be run faster than 80 feet per second, nor have a tension of above 800 lbs. per square inch of section. The friction of a belt on a pulley is proportional to the arc in contact with the belt. This friction depends also on the material of the pulley, and is nearly as much again on wood as on cast-iron. When a machine has to be driven very fast, as is the case with wood-turners' lathes, the friction on the bearings has to be reduced as much as possible to prevent heating, by leaving the belt loose on the pulleys. The proper friction is then obtained by sprinkling chalk or powdered rosin on the belt, but this treatment injures it, and is only resorted to for small belts, the price of which is insignificant when compared with the value of the work performed. The friction of a belt or of a rope on a standing cylinder is accurately known, and is found in the following manner: a belt is passed over a horizontal cylinder, a known weight is suspended at one end, and the other is attached to a spring-balance, and gradually let go till the belt or rope begins to slide; the suspended weight *minus* the one indicated is the friction. It has thus been found that by taking a turn and a half around a rough cylindrical post, 1 lb. will hold 110 lbs. in check, and

that by taking 2½ turns 1 lb. will hold 2,500 lbs. As data to start from in designing a belt, the following is a good example: a 12 inch belt, over a pulley of 4 feet in diameter, running 80 feet a second, will transmit the power from a 6 inch cylinder, 1 foot stroke, 60 lbs. pressure, making 125 revolutions per minute.

BELTS, GREAT and LITTLE, the name given to 2 narrow channels which connect the Baltic with the Cattegat. The Great Belt is 37 miles long, 18 miles in medium width, and from 6 to 26 fathoms deep. It lies between the islands of Seeland and Funen, the shores of which present no striking features, but are lined with safe harbors. Navigation is difficult at all seasons on account of many dangerous shoals and sand-banks, and in winter is still further obstructed by floating ice, though the swiftness of the current prevents the strait from being often frozen over. Light-houses have been erected on the shores, and on the small island of Sprogø, which lies in the middle of the channel, and which the action of the waves is gradually wearing away.—The Little Belt separates Funen from Jutland. It is 80 miles long from 1,000 yards to 12 miles wide, and from 5 to 80 fathoms deep. The shores are low and regular, and the current rapid. It is frozen over from December to April, and navigation at other seasons is attended with the same dangers as in the Great Belt. Large vessels usually pass through the sound, which is the only channel except the Belts between the Cattegat and the Baltic.

BELUS, a river about 5 miles long, which rises in the slopes of that range of hills anciently known as Carmel, and empties into the Mediterranean. It lies in the present Syrian pashalic of Acre, near the bay of the same name. It is noted as the source of the sand out of which, Pliny says, glass was first made. The story of the accidental discovery of its vitreous properties is familiar. As late as the middle of the 17th century, it furnished the supply of the principal glass manufactories of Italy. The Greek name for glass (*ύελος*) was perhaps corrupted from Belus. The present name of this river is Naman.

BELUS, the name of the national god of the Babylonians, and perhaps the same as Baal, whose worship became so general in the East, and so often incorporated into Judaism, or at least adopted and practised by the Jews. It does not appear, however, from the accounts given by Herodotus and Diodorus, that Belus was worshipped by human sacrifices, while Baal very plainly was. But if the worship of Belus was of later date than that of Baal, this difference in the rites may be accounted for. If there were two temples or towers at Babylon, as some antiquaries and critics have maintained—first, the temple of Baal, or tower of Babel, and secondly, the tower of Belus, built later on the site of the former, after the long desertion of Babylon for the rival city and empire of Nineveh, and at the return of the scep-

tre to Babylon under Nabopolassar—then the worship may have been so modified by time and culture as to account for all this apparent difference between Baal and Belus, and make the latter only the reappearance, after the lapse of ages, of the former. At any rate, in the worship of Belus, appears the same general conception which characterized that of Baal, viz., that of male and female divinities; for in the ancient representations of Belus, like Baal, he is represented as the sun, and the moon is always present, and so the worship of both Baal and Belus is the worship of the prolific power of nature.

BELUS, TEMPLE OF. The huge and barren mound of yellow earth and bricks known to modern travellers as Birs Nimroud, was by the early eastern explorer, Benjamin of Tudela, regarded as the identical tower of Babel, arrested in its erection by the divine interposition, as recorded in Genesis. Later explorations resulted in the opinion that the present tower was the one built by Nebuchadnezzar in the reestablishment of the Chaldean dynasty in Babylon (B. C. 625), and that it occupied the site of the tower of Babel, which had become more or less dilapidated or completely removed during the 16 or 17 centuries that had elapsed since its erection. Still more modern examinations have, however, resulted in the suggestion (by Sir Henry Rawlinson, 1854) that the present structure by Nebuchadnezzar occupies the site of a former temple or tower erected by a former king, during the period when the Chaldean power was partially humbled under the Assyrian. A cuneiform record found on the cylinders built into the corners of the present structure, attributes the previous temple to Tiglath-Pileser I., who dates back 504 years before Nebuchadnezzar. If, therefore, the present site (Birs Nimroud) be the site of the tower of Babel, it must have been twice rebuilt. The remains, so far as yet discovered, belong to the time of Nebuchadnezzar. The bricks taken from it all bear his name. The temple of Belus is described by Herodotus as a square building or platform on which rise successively eight terraces; on the top of the last a temple crowns the structure. These terraces, he says, were ascended on the outside. The ruin of Birs Nimroud is described by modern travellers as a huge and irregular mound of barren yellow sand, underneath which explorations have laid bare a mass of brickwork showing the evidences of a subjection to the agency of fire after the erection, and still preserving in many parts a terraced structure, but not so complete as to afford any determination of the number of the terraces. Layard, in his "Discoveries among the Ruins of Nineveh and Babylon," gives the height of the entire mound as 235 feet, and proposes a restoration of the original form, in a conjectural number of terraces, on the eastern side, but perpendicularly rising on the west in a solid wall. This mound stands about 6 miles S. W. of Hillah, and be-

tween Hillah and Birs Nimroud are frequent remains of ancient buildings or fortifications, giving rise to the conjecture that this may be the lost western half of the ancient city of Babylon, through which the Euphrates made a nearly diagonal course from north to south.

BELVEDERE. In Italian architecture, the name Belvedere is applied to a pavilion on the top of a building; also to an artificial eminence in a garden. With the continental Europeans, this name is a great favorite for the designation of villas, palaces, villages, and streets. There is the palace Belvedere, in Rome, for instance, which contains, among other wonderful works of art and antiquity, the world-renowned statue, known as the Apollo Belvedere; also the imperial villa of Belvedere, in Vienna, formerly the property of Eugene of Savoy, with a gallery of paintings, and the Ambrosian collection of ancient weapons; also the chateau of Belvedere, near Weimar, immortalized by Goethe, who loved to roam in the park and the surrounding promenades. In Saxon Switzerland, near the village of Hirnschutchen, there is a fine castle of Belvedere; there is one also near Neu-Strelitz in Mecklenburg. The French for Belvedere is Bellevue; this is also a popular name for villas and castles. The most celebrated was that built for Madame de Pompadour, in 1748, on a mountain ridge, between St. Cloud and Meudon, and decorated by the most eminent artists of her day. Louis XV. was so enchanted with the chateau, that he purchased it. After his death, the aunts of Louis XVI. lived there.

BELVOIR, an extra-parochial district of England. On an isolated eminence, overlooking a beautiful and fertile vale, stands Belvoir castle, the seat of the duke of Rutland. This mansion was erected by William de Todenet, standard-bearer of William the Conqueror, and despite many modern additions, still preserves the appearance of an old baronial residence. In the time of Henry VIII., it passed, with its numerous dependencies, into the hands of the Manners family.

BELZONI, GIOVANNI BATTISTA, a traveller and explorer in Egypt, the son of an Italian barber, born at Padua about 1778, died Dec. 8, 1823. He was educated for a monastic life at Rome. This plan was interrupted by the French revolution, and after wandering for some time about the continent, he went to England in 1808. Here he at first gained a precarious subsistence by exhibiting as an athlete, at Astley's circus, being endowed with prodigious strength. To these feats were added scientific experiments, as he had paid much attention to natural philosophy, particularly to the branch of hydraulics. He married in England, and after residing there for 9 years, conceived a strong desire to travel in the south of Europe. Accordingly, he set out with his wife, and visited Portugal, Spain, and Malta. While in that island, it is supposed that he thought of turning his knowledge of hydraulics to good account, by offering his services to the pasha of Egypt in constructing wa-

ter wheels to irrigate the fields contiguous to the river Nile. He arrived in Egypt June 9, 1815, and constructed for the pasha one of his hydraulic machines, at the gardens of Soobra, 3 miles from Cairo. Mehemet Ali himself appears to have been satisfied with its powers, but the Turkish and Arab cultivators regarded it as an innovation, and as their narrow prejudices were not to be overcome, Belzoni abandoned his scheme without even being rewarded by the pasha for what he had undertaken. His curiosity being now strongly excited on the subject of Egyptian antiquities, at the recommendation of Burckhardt, he was employed by Mr. Salt, the English consul, to remove the colossal head, generally but incorrectly styled the young Memnon. This Belzoni successfully accomplished, transporting it to Alexandria, and thence shipping it for England. For this purpose, Belzoni went to Thebes, and then crossing to the west bank of the Nile, visited the Memnonium, where was the mighty head he was to remove. He found it, as he narrates, near the remains of its body and chair, apparently smiling upon him at the thought of being carried to England. After incredible toil and perseverance, in the face of vexatious delays, the head was brought to the edge of the Nile, Aug. 12, 1816, placed on board of a boat, Nov. 17, and safely landed at Cairo, Dec. 15 following. In the mean time, he made excursions with his wife, who was as much interested in Egyptian antiquities as himself, and who rendered essential service, to the mountain of Gornoo, celebrated for its vast sepulchral excavations, and the number of mummies contained in them. He proceeded also to Asswan, and the beautiful island of Philæ, renowned for its majestic ruins, and on arriving at Ipsamboul, he saw with amazement the mighty rock-cut temple which had been discovered by Burckhardt. This temple he was the first to open, its entrance having been completely choked with sand. In 1817 he made a second journey to upper Egypt, and became involved, greatly against his will, in some very unpleasant squabbles with Drovetti, the French consul, and his coadjutor the count de Forbin. He visited the necropolis of Thebes, and made excavations at Karnac. Among the catacombs at the mountain of Gornoo, which was the burial-place of Thebes, he made diligent search for papyri, which are sometimes found wrapped in the swathings of the mummy, about the breast, arms, or legs. It is impossible, as Belzoni observes, to form an adequate idea by any description of these awful repositories of the Egyptian dead. The necropolis is a tract of about two miles in length, at the foot of the Libyan range, and every part of these rocks is scooped out into a sepulchre. "In some places there is not more than the vacancy of a foot left, which you must contrive to pass through in a creeping posture, like a snail, on pointed and keen stones, that cut like glass. After getting through these passages, some of them 200 or 300 yards long,

you generally find a more commodious place, perhaps high enough to sit. But what a place of rest! surrounded by bodies, by heaps of mummies in all directions, which, previous to my being accustomed to the sight, impressed me with horror. The blackness of the wall; the faint light given by the candles or torches, for want of air; the different objects that surrounded me, seeming to converse with each other; and the Arabs, with the candles or torches in their hands, naked and covered with dust, themselves resembling living mummies—absolutely formed a scene that cannot be described. After the exertion of entering into such a place, through a passage of 50, 100, 300, or perhaps 600 yards, nearly overcome, I sought a resting place, found one, and contrived to sit; but when my weight bore on the body of an Egyptian, it crushed it like a handbox. Once I was conducted from such a place to another resembling it, through a passage of about 20 feet in length, and no wider than the body could be forced through. It was choked with mummies, and I could not pass without putting my face in contact with that of some decayed Egyptian; but as the passage inclined downward, my own weight helped me on. I could not help being covered with bones, legs, arms, and heads, rolling from above. Thus I proceeded from one cave to another, all full of mummies, piled in various ways, some standing, some lying, and some on their heads." Belzoni also discovered another colossal head of granite, which is now in the British museum, and, in the valley of Behan-el-Molouk, the most perfect of known Egyptian tombs. It contained several chambers, sculptured and painted in the most magnificent manner, and a sarcophagus of the finest oriental alabaster, 9 feet 5 inches long, and 8 feet 7 inches wide. Having taken drawings of the tomb and its paintings, Belzoni exhibited a model of it in London, in 1821, which attracted crowds of visitors. Before leaving Egypt, he succeeded, in 1818, after much trouble, in discovering the entrance to the second of the great pyramids of Ghizeh, that of Oephe-nees. This, ever since the time of Herodotus, was believed to be without internal chambers. After 80 days of persevering labor, Belzoni found the entrance, and penetrated to the central chamber. He also visited the district of Fayoom, and the so-called oasis of Jupiter Ammon, Lake Moeris, and discovered the ruins of Berenice. He left Egypt in Sept. 1819, and visited his native city of Padua, where a medal was struck in his honor; and on his return to England, he published an interesting narrative of his travels and operations amid the monuments of the Nile. In 1823 he formed the design of penetrating to Timbuctoo, in Africa, and had reached the Bight of Benin, but was attacked with dysentery, which carried him off, at a small place in Benin.

BEM, Jozzer, a Polish general, born at Tarnow, in Galicia, in 1795, died Dec. 10, 1850. The passion of his life was hatred of Russia.

At the epoch when Napoleon, by victories and proclamations, was exciting a belief in the resurrection of Poland, Bem entered the corps of cadets at Warsaw, and received his military training at the artillery-school directed by Gen. Pelletier. On leaving this school, he was appointed lieutenant of the horse-artillery; served in that capacity under Davoust and Macdonald in the campaign of 1812; won the cross of the legion of honor by his coöperation in the defence of Dantzic; and, after the surrender of that fortress, returned to Poland. As the czar Alexander, affecting a great predilection for the Polish nation, now reorganized the Polish army, Bem entered the latter in 1815, as an officer of artillery, but was soon dismissed for fighting a duel with his superior. However, he was subsequently appointed military teacher at the artillery-school of Warsaw and promoted to the rank of captain. He now introduced the use of the Congreve rocket into the Polish army, recording the experiments made on this occasion in a volume originally published in French and then translated into German. He was querulous and insubordinate, and, from 1820 to 1825, was several times arraigned before courts-martial, punished with imprisonment, released, imprisoned again, and at last sent to Kock, a remote Polish village, there to vegetate under strict police surveillance. He did not obtain his discharge from the Polish army until the death of Alexander, and the Petersburg insurrection made Constantine lose sight of him. Leaving Russian Poland, Bem now retired to Lemberg, where he became an overseer in a large distillery, and elaborated a book on steam applied to the distillation of alcohol. When the Warsaw insurrection of 1830 broke out he joined it, after a few months was made a major of artillery, and fought, in June, 1831, at the battle of Ostrolenk, where he was noticed for the skill and perseverance with which he fought against the superior Russian batteries. When the Polish army had been finally repulsed in its attacks against the Russians who had passed the Narev, he covered the retreat by a bold advance with the whole of his guns. He was now created colonel, soon after general, and called to the command-in-chief of the Polish artillery. At the storming of Warsaw by the Russians he fought bravely, but, as a commander, committed the fault of not using his 40 guns, and allowing the Russians to take Vola, the principal point of defence. After the fall of Warsaw he emigrated to Prussia with the rest of the army, urged the men not to lay down their arms before the Prussians, and thus provoked a bloody and unnecessary struggle, called at that time the battle of Fischau. He then abandoned the army and organized in Germany committees for the support of Polish emigrants, after which he went to Paris. His extraordinary character, in which a laborious fondness for the exact sciences was blended with restless impulses for action, caused him to readily embark in adventurous enterprises, whose failure gave an advan-

tage to his enemies. Thus having in 1833, on his own responsibility, undertaken without success to raise a Polish legion for Don Pedro, he was denounced as a traitor, and was fired at by one of his disappointed countrymen, in Bourges, where he came to engage the Poles for his legion. Travels through Portugal, Spain, Holland, Belgium, and France, absorbed his time during the period from 1834 to 1848. In 1848, on the first appearance of revolutionary symptoms in Austrian Poland, he hastened to Lemberg and thence, Oct. 14, to Vienna, where all that was done to strengthen the works of defence and organize the revolutionary forces, was due to his personal exertions. The disorderly flight in which, Oct. 25, a sally of the Viennese mobile guard, headed by himself, had resulted, wrung from him stern expressions of reproof, replied to by noisy accusations of treason, which, in spite of their absurdity, gained such influence that, but for fear of an insurrection on the part of the Polish legion, he would have been dragged before a court-martial. After his remarkable defence, Oct. 28, of the great barricade erected in the Jägerzeile, and after the opening of negotiations between the Vienna magistrates and Prince Windischgrätz, he disappeared. Suspicion, heightened by his mysterious escape, dogged him from Vienna to Pesth, where, on account of his prudent advice to the Hungarian government, not to allow the establishment of a special Polish legion, a Pole named Kolodjecki fired a pistol on the pretended traitor and severely wounded him. The war in Transylvania, with the command of which the Hungarian government intrusted Bem, leaving it, however, to his own ingenuity to find the armies with which to carry it on, forms the most important portion of his military life, and throws a great light upon the peculiar character of his generalship. Opening the first campaign toward the end of Dec. 1848, with a force of about 8,000 men, badly armed, hastily collected, and consisting of most heterogeneous elements—raw Magyar levies, Honveds, Viennese refugees, and a small knot of Poles, a motley crew reinforced in his progress through Transylvania by successive drafts from Szeklers, Saxons, Slaves and Roumanians—Bem had about 2 months later ended his campaign, vanquished Puchner with an Austrian army of 20,000 men, Engelhardt with the auxiliary force of 6,000 Russians, and Urban with his freebooters. Compelling the latter to take refuge in the Bukovina, and the two former to withdraw to Wallachia, he kept the whole of Transylvania save the small fortress of Karlsburg. Bold surprises, audacious manœuvres, forced marches, and the great confidence he knew how to inspire in his troops by his own example, by the skilful selection of covered localities, and by always affording artillery support at the decisive moment, proved him to be a first-rate general for the partisan and small mountain warfare of this first campaign. He also showed himself a master in the art of suddenly creating and disciplining an army; but being content

with the first rough sketch of organization, and neglecting to form a nucleus of choice troops, which was a matter of prime necessity, his extemporized army was sure to vanish like a dream on the first serious disasters. During his hold of Transylvania he did himself honor by preventing the useless and impolitic cruelties contemplated by the Magyar commissioners. The policy of conciliation between the antagonist nationalities aided him in swelling his force, in a few months, to 40,000 or 50,000 men, well provided with cavalry and artillery. If, notwithstanding, some admirable manoeuvres, the expedition to the Banat, which he engaged in with this numerically strong army, produced no lasting effect, the circumstance of his hands being tied by the coöperation of the incapable Hungarian general, must be taken into account. The irruption into Transylvania of large Russian forces, and the defeats consequently sustained by the Magyars, called Bem back to the theatre of his first campaign. After a vain attempt to create a diversion in the rear of the enemy, by the invasion of Moldavia, he returned to Transylvania, there to be completely routed, July 29, at Schässburg, by the 8 times stronger Russian forces under Lüders, escaping captivity himself only by a plunge into a morass from which some dispersed Magyar hussars happened to pick him up. Having collected the remainder of his forces, he stormed Hermannstadt for the second time, Aug. 5, but for want of reinforcements soon had to leave it, and after an unfortunate fight, Aug. 7, he retraced his steps to Hungary, where he arrived in time to witness the loss of the decisive battle at Temesvár. After a vain attempt to make a last stand at Lugos with what remained of the Magyar forces, he reentered Transylvania, kept his ground there against overwhelming forces, until Aug. 19, when he was compelled to take refuge in the Turkish territory. With the purpose of opening to himself a new field of activity against Russia, Bem embraced the Mussulman faith, and was raised by the sultan to the dignity of a pasha, under the name of Amurath, with a command in the Turkish army; but, on the remonstrances of the European powers, he was relegated to Aleppo. Having there succeeded in repressing some sanguinary excesses committed during Nov. 1850, on the Christian residents by the Mussulman populace, he died about a month later, of a violent fever, for which he would allow no medical aid.

BEM, MAGNUS VON, a Russian traveller, lived in the second half of the 18th century, was governor of Kamtchatka from 1772 to 1799, was honored for his efforts to ameliorate the condition of that country, and for his philanthropic exertions to succor the companions of Capt. Cook in 1775, and asked to be recalled from his office by reason of ill health.

BEMBATOOKA, BEMBATOOK, or BOMBETOK, a bay and town on the N. W. coast of Mada-

gascar. The town is small, and of no importance, but the bay is commodious enough to receive the largest fleet.

BEMBO, BONIFAZIO, an Italian painter, born at Valdarno, was employed by the court of Milan about the middle of the 15th century. He assisted in the decoration of the cathedral of Cremona, where he painted the "Purification" and the "Adoration of the Magi." His works are esteemed for their brilliant coloring, bold attitudes, and splendid drapery.—GIOVANNI FRANCESCO, brother and pupil of the preceding, a painter of the Cremonese school, who of all his contemporaries departed farthest from the antique manner, and resembles Fra Bartolommeo in coloring, though inferior to that master in dignity and energy of expression.

BEMBO, PIETRO, an Italian cardinal and author, born at Venice, May 20, 1470, died at Rome, Jan. 18, 1547. He was of a noble family, and at an early age studied at Florence, whither his father was sent as ambassador. To his 2 years' residence in that city the Florentine authors attribute his perfect command of the Tuscan dialect. Master of an elegant Latin style, he went in 1493 to Messina, in Sicily, to study Greek under the learned exile from Constantinople, Lascaris. Returning 2 years later to his native city, he was so besieged with questions about Ætna, that to satisfy all at once he wrote his treatise upon that mountain, which was his first publication. He then frequented the courts of Ferrara and Urbino, pursuing philosophical and literary studies, and admired for his wit and graceful manners. Learning and letters were then in the highest esteem in the noble families of Italy, and Bembo had many powerful patrons, received favors from Pope Julius II., and accompanied his friend, Giovanni de' Medici, on his way to Rome, to be crowned Pope Leo X. He was made secretary to the new pope, enjoyed the acquaintance of the many distinguished men in that age of the Medici, and busied himself in the labors of composition. The young and beautiful Morosina, whom he tenderly loved, persuaded him upon the death of Leo X. in 1521 to retire from public affairs, and to spend the rest of his life in literary elegance at Padua. Here he formed an extensive library and collection of medals, enjoyed the society of his learned friends, and his house was called the temple of the muses. He sometimes visited Rome, and having become a cardinal after the accession of Paul III., he determined to embrace another manner of life. He renounced profane letters, studied the fathers and theologians, was advanced to several bishoprics, and died in sentiments worthy of a prince of the church. His writings, consisting of letters, poems, dialogues, criticisms, fragments, and a history of Venice, are distinguished for their elegance and gracefulness of style. Without either imagination or force of thought, he was yet a consummate imitator of Cicero in Latin, and of Petrarch in Italian. His works were

the favorite reading among the superior ranks of Italy, and an acquaintance with them was necessary in order to mingling in polished society. It is his chief merit that he was one of the first to revive the beauties of the Italian tongue, after the invasions of classical learning had made the language of Dante vulgar.

BEN. See ABEN.

BENALCAZAR, **SEBASTIAN DE**, the first conqueror of Popayan, New Granada, born about the end of the 15th century, at Benalcaz, in Estremadura, Spain, died in 1550. He set out as a common sailor in the train of Pedrarias, the newly appointed governor of Darien, 1514. The ability and daring of young Sebastian gained for him the confidence of Pizarro. This conqueror sent him against the Indian leader, Ruminahui. Sebastian was favored at the moment of engagement by a happy accident; the volcano of Cochabamba suffered an eruption. The Peruvian army was more frightened at it than the Spaniards, and fled to Quito. Sebastian then possessed himself of the smoking ruins of this city. From here he passed northward and conquered the territory possessed by a chief named Popayan, whose name he preserved to designate the territory over which the former had held sway. Inflamed by the speeches of an Indian captive, who spake strange words about a chief further north, who was anointed with gold-powder, Benalcazar and his band determined to visit and conquer this *El Dorado*, or chief of gold. After traversing vast forests, in 1584, he arrived at the country which afterward received the name of New Granada. Arrived there, he found himself forestalled by two other Spanish adventurers, or *conquistadores*. He returned to Popayan, and was made governor of this province by a decree dated 1538. When La Gasca succeeded in supplanting Diego Pizarro, he deprived Sebastian of his governorship. The conqueror of Popayan died heart-broken at this result of a life spent in adventure and in the service of the Spanish crown.

BENAOCAZ, a town of Spain, in a mountainous district of Andalusia, 60 miles N. E. from Cadiz. It has a parish church and town-house, and a promenade and avenue, with beautiful gardens and fountains.

BENARES, a large and famous city of Hindostan, the capital of a division of the Bengal presidency, on the left bank of the Ganges, 890 miles N. W. of Calcutta, and 420 miles S. E. of Delhi. It is famous as having been, in ancient times, the seat of Braminical learning and speculation. It is entitled to the distinction of being regarded as the Hindoo Rome, or the ecclesiastical metropolis of Hindostan. It has been styled the Athens of India. The city is regarded as a sacred place by the Hindoos, who resort to it in great numbers from every part of Hindostan. It is always thronged with mendicant priests. Its external appearance is highly imposing. It stretches for several miles along the edge of the river, from which ascend

numerous flights of stone steps. The streets are only a few feet wide, and the buildings, which are principally stone, are very lofty. They are built to enclose a circular space, and frequently contain 200 inhabitants each. The wealthy Hindoos live in detached houses, surrounded by walls with open courts. The poorer live in mud-built dwellings, of which there are 16,000. In the centre of the city is a large mosque, with 2 minarets 232 feet high, built by Aurungzebe on the site of a magnificent Hindoo temple, which he destroyed for the purpose of erecting the present building. There are numerous other mosques, a great number of Hindoo temples, an ancient observatory, and the Hindoo Sanscrit college, the chief institution of native learning in India. The population is estimated at from 200,000 to 500,000; but at certain times the number is immensely increased. Nine-tenths of these are Hindoos, and the remainder Mohammedans. Among its inhabitants are many wealthy native bankers and dealers in diamonds, for which gem the city is famous. It is the seat of a British court of circuit and appeal, an English college, numerous Christian missions, and Mohammedan and Hindoo schools. Benares has a very extensive trade in shawls, muslins, silks, cottons, and fine woollens, of its own manufacture, and in European goods, salt, indigo, and opium.—A mutiny of native troops took place here June 4, 1857. The military authorities of the city, apprehending the spread of disaffection in the 37th regiment of native infantry, stationed at Benares, determined to disarm them. But the promulgation of an order to this effect only hastened an outbreak. The infantry immediately fired upon their officers, killing 2 or 3, and wounding others, while the greater part of a body of Sikhs and the 18th irregular cavalry, upon whom the Europeans chiefly relied, sided with the mutineers and joined in the attack. A few buildings were burnt, but a small detachment of the Madras fusileers arriving opportunely that same day, the rising was speedily put down.—The district of Benares is situated between lat. 24° and 25° N., and between the rivers Ganges and Sye (which on 3 sides separate it from Ghazipoor), having west the districts Mirzapoor and Juanpoor. It was ceded in 1775 to the East India company, by the king of Oude. In 1776, the district was granted to the rajah Cheyt Singh, of Benares, subject to the payment of an annual tribute to the company. The violation of this agreement by Mr. Hastings, governor-general of India, formed one of the charges against him in the case of his impeachment by the house of commons. The area of Benares is 994 square miles. It is well watered by the Ganges and the Goomty rivers, and by several tributaries of these streams. The land is mostly fertile and well cultivated. The native products are barley, wheat, peas, flax, and sugar. The most profitable productions are indigo and opium. During 9 months of the year the

climate is temperate, but during the 3 months from April to June, hot winds prevail, and destroy the verdure. Pop. in 1853, 851,757.

BENBOW, JOHN, an English admiral, born in Shrewsbury in 1650, died in Jamaica, Nov. 4, 1702. He was reared in the merchant service, and in one of his trips to the Mediterranean in 1686, he conducted an engagement so desperately against an African corsair, that he was invited to the Spanish court by Charles II., who recommended him to James II. of England. The latter gave him the command of a ship of war to protect British interests in the English channel, and subsequently he was promoted to the rank of rear-admiral, and employed in blockading and bombarding the French ports. In 1701, with a squadron under his command, he sailed to the West Indies. This command had been previously declined by several of his seniors, as an extra-hazardous expedition. But in the conduct of it, Benbow's courage and energy were so conspicuous as to elicit the commendation of the commons. In the following year, and on a second expedition to the Indies, he encountered the French fleet under Duquesne, and for 5 days maintained a running fight with them. He succeeded in bringing the enemy's sternmost ship to close quarters, but his chief officers refused to second his efforts. Here he lost a leg by a chain-shot, an event, which, though it did not abate his ardor, gave occasion for some of his captains to agree "that nothing more was to be done." On his return to Jamaica, he brought the delinquents to court-martial, which convicted them of disobedience and cowardice, and caused them to be shot. His wound, and the emotion caused by these events, concurred with a pulmonary disease to hasten his death at the age of 52. Benbow was not a very successful commander, but was distinguished for his bravery and professional enterprise. His whole life was spent in active service at sea.

BENCOOLEN (Malay, *Bangka Ulu*, rolling uplands), a Dutch residency on the N. W. coast of Sumatra; bounded N. by Manjuta river; E. by the mountain chain extending from Gunung Raja, to the extremity of the peninsula, forming the W. side of Samangka bay; and W. by the Indian ocean. Area, including the island of Engano, which belongs to this residency, 8,736 sq. m.; pop. in 1849, 93,875. This long narrow strip of territory, lying between a mountain-chain and the sea-board, very much resembles Chili in South America, in form. The soil is inferior to that of the eastern slope of the island; it is for the most part a stiff, red clay, burnt nearly to the state of a brick where it is exposed to the sun. The chief culture was pepper, during the first intercourse of Europeans with this country. In 1798, the clove and nutmeg were introduced from the Moluccas; but the latter alone has succeeded, and that only by manuring, and much labor and care, not required in the parent country. The

forests between Cawoor and Oroé abound in *gutta percha* and *gutta taban* trees, which produce a gum of excellent quality. Coffee is beginning to be cultivated, even by the natives on their own account, to considerable extent. The *styrax benecoin* tree, from which the gum benjamin of commerce is obtained, are grown in plantations. The buffalo and goat are the only large animals domesticated; the use of the horse as a beast of burden is not known to the natives of this territory, or even in any portion of the southern half of the island, and it is only rarely imported for the saddle, by Europeans. Tigers are very numerous in this part of the island, and materially impede the prosperity of the country; it is impossible to raise small stock, except in the well-defended enclosures of large villages. The Rejangs, one of the most civilized races of Sumatra, compose the greater portion of the population of this territory.—The chief town of the above territory, also named Bencoolen, is in lat. 3° 47' 30" S., long. 102° 48' E.; pop. 7,500. The British East India company established a factory at this point, for the pepper trade, June 25, 1685. In 1714, Fort Marlborough was founded, 3 miles distant. In 1760, the French under Count D'Estaing captured and took possession of the fort and factory; but they were restored to the company by the treaty of Paris in 1763. By the treaty of London in 1824, the English government ceded the fort and factory, and establishments dependent on them, which then embraced a territory of about 12 square miles, to the Dutch, in exchange for Malacca and its territory, and Oinsura, in Hindostan, after being in possession 140 years. Bencoolen was an unprofitable dependency of the Bengal presidency, and cost the East India company, on an average, about \$60,000 per annum, during the whole period of its possession; it was maintained partly from a point of honor, but chiefly on account of an infatuated over-estimate of the advantages expected to grow out of the pepper trade. During the English possession, the town contained 20,000 inhabitants, which have now dwindled to one-third that number, composed of Rejangs, Malays, Bughis, and a large number of Arabs and Chinese. A Dutch assistant-resident resides here.

BENDA, FRANZ, a German violinist, born in Bohemia, in 1709, died at Potsdam, in 1786. He exhibited, while a boy, a great desire to learn the violin, which he could gratify in no other way than by joining a band of strolling musicians. He found means, however, to acquire an extraordinary mastery of the instrument, and in 1732 entered the service of Frederick the Great, then prince-royal, with whom he remained the rest of his long life. He founded a school of violinists, whose method of playing was entirely original and quite effective. He also published some excellent solos for the violin.—GZOKA, a brother of the preceding, and a composer of music, born in Bohemia, in 1722, died at Köstritz, in 1795. He pass-

ed many years of his life as musician in the service of the courts of Prussia and Gotha, and perfected his style by a visit to Italy in 1760. He composed a number of comic operas, and 2 of a serious character entitled "Ariadne in Naxos" and "Medea," which are written with much feeling and taste. His music, according to Dr. Burney, is new, profound, and worthy of a great master, and the best of it was composed after his return from Italy. Beside his operas, Benda wrote some excellent sonatas for the harpsichord.

BENDALOU, PAUL, a gallant soldier of the American revolutionary army, born at Montauban, in France, Aug. 15, 1755, died in Baltimore, in Maryland, Dec. 10, 1826. In Oct. 1776, he embarked at Bordeaux for the United States, as a volunteer in the cause of liberty, and, on reaching the head-quarters of Washington, he received a lieutenant's commission. Transferred to the command of Pulaski, he was captain of the first company in his famous legion at the siege of Savannah. There he carried off the field the body of the generous Pole, and preserved, also, the standard of the legion, which had been wrought and presented by the wives and daughters of Maryland. He was quartermaster-general, with the rank of colonel, in the Maryland militia during the war of 1812, and for many years U. S. marshal for the circuit and district courts of Maryland, his official conduct, from first to last, being marked with exactness and integrity.

BENDAVID, LAZARUS, a German philosopher and mathematician, born of Hebrew parents at Berlin, Oct. 18, 1762, died March 28, 1832. A glass-grinder by trade, he attained by his own unaided efforts such a degree of learning, that he was admitted as student in the university of Göttingen, although he never went through the usual preparatory course of studies. He graduated with much distinction at Göttingen, and on his return to Berlin devoted himself to the study of Kant. He remained throughout his life a faithful disciple of this philosopher, and prepared a course of lectures upon his theory, which he first delivered at Berlin, and subsequently at Vienna, where he resided for several years, until the persecutions to which he was subjected there induced him to return to his native city. He continued to lecture in Berlin, and displayed at the same time a laudable activity in many other literary and beneficent directions. During the sway of Napoleon in Germany, he edited the *Haude und Spener'sche Zeitung*.

BENDEMANN, EDUARD, a German painter, born of Jewish parents, at Berlin, Dec. 3, 1811. He studied at Düsseldorf. His first work that attracted much notice was "Boaz and Ruth." In 1832 he gained a wide reputation by his picture of the "Jews by the rivers of Babylon." Among his other paintings may be mentioned "Jeremiah on the ruins of Jerusalem," the "Harvest," and other smaller pictures. Bendenmann has also distinguished himself as a portrait

and fresco painter. In 1838 he was appointed professor at the academy of fine arts at Dresden, and intrusted with the execution of some important works in fresco in one of the royal palaces of that city.

BENDER, a fortified town in Bessarabia, on the right bank of the Dniester, 48 miles from its mouth. It has a citadel with 600 artillerymen. Near it is Varnitza, the retreat of Charles XII., after the battle of Poltava. Bender was taken by storm by the Russians in 1809, but was restored to Turkey at the peace of Jassy. In 1812 it was ceded to Russia. It has 7 gates, 12 mosques, and an Armenian and Greek church. Pop. 5,000.

BENDING MACHINE. One of the greatest difficulties that shipbuilders have to contend with, is procuring timber of the proper shape. In some parts of Europe officers are appointed to find out and mark the trees which are fit for the use of the navy, whether they stand on public or on private ground, and henceforward it becomes an offence, punishable by fine, for the proprietor to fell them. The knees are particularly difficult to procure, for a great number are wanted, nearly all of them of different angles, and each has to be cut from a tree at the junction of 2 branches forming the angle wanted. The ribs are seldom found in nature, and are made of several pieces joined together at a considerable expense. Efforts have been made at various times to substitute artificially curved wood for that grown with the proper shape. The following titles of patents are found in the records of the U. S. patent office: Timber bending for boats, J. Orbison, Piqua, O., 1820; the same, Green and Blakesley, Litchfield, Conn., 1822; Bending masts and truss hoops, J. Milford, Northern Liberties, Penn., 1835; Bent timber for ships and for knees, in 2 patents, W. Ballard, New York, 1854; Machine for bending wood, E. Updegraff, York, Penn., 1856; the same, T. Blanchard, Boston, Mass., 1856; the same, Edwin and Artemas and Cheney Killburn, Burlington, Vt., 1856. Several of these patented machines are intended for small pieces of wood, others for large timber. In all, the wood is first rendered soft by wetting and warming it over a fire, or by warming it in steam. It is then placed in the machine, which bends it into a shape that the wood retains after cooling. When the timber is large the fibres on the convex part of the curve are much extended, and those in the concave are much compressed; the result is a tendency to split; this is prevented by so constructing the machine that the wood is compressed on all sides and at both ends during the operation. A company has been formed in New York, under the title of the "American Timber-bending Co.," with workshops near the city. They have been at work but a short time, and are now engaged in putting up machines of an increased size. Timbers bent by the company have been submitted to experiments to test their strength, and it is claimed

that they have been found much stronger than similar pieces of natural growth. This result is not improbable, and is much to be desired, but it is not yet accepted by all naval engineers.

BENDISH, **BENIGER**, the granddaughter of Oliver Cromwell, of England, and the daughter of Gen. Ireton, born about 1650, died 1727. In her early years she was brought up at Cromwell's court, and was present at the audiences he gave to foreign ambassadors. She bore a wonderful resemblance to the protector, physically and morally; her energy was immense; she would work for days together without sleeping; had uncommon conversational powers; was liable to periodic attacks of religious ecstasy; and managed her salt-works at Southtown, in Norfolk, with great exactness. By her open-handed benevolence she was popular with the poor. She could never bear to hear her grandfather evil spoken of, and one day when travelling in the stage-coach, a tory squire so committed himself, not knowing in whose presence he was; she jumped out at the next stage, snatched a sword from another fellow-passenger, and challenged the royalist gentleman to a duel. She would sometimes drive her carriage into Yarmouth, and spend an evening at the assembly rooms in that city, where her princely manners, venerable aspect, and imposing energy of voice and manner, recalled the protector to the eyes of a generation who knew him only in the distance of history, and made her the lion of the evening. A memoir of her by a local physician has been preserved, and even been translated into French, by Guizot.

BENEDICT, the name of several popes of the Roman Catholic church. **I. BENEDICT II.**, elected in 684, was a Roman, remarkable for scriptural science, piety, and kindness to the poor. He caused the decrees of the sixth general council (against the Monothelites) to be accepted by the Spanish bishops, and also induced the Greek emperor to give up the usurped right of confirming the election of the pope. Constantine IV. sent him some locks of the hair of his sons, Justinian and Horatius, signifying thereby that he recognized him as their adopted father. This pope reigned one year, and died May 6, 685. **II. BENEDICT III.** (855), a Roman, and cardinal priest, is praised even by Photius for meekness and benevolence. He signalized himself by zeal in building and beautifying churches in Rome, and in unison with Ethelwolf, king of the Anglo-Saxons, established an English college in Rome. He confirmed the deposition of Gregory, the unworthy bishop of Syracuse, pronounced by Ignatius, patriarch of Constantinople, which was the occasion of the subsequent deposition of Ignatius and intrusion of Photius in his place, and of the Greek schism. He died April 8, 858. **III. BENEDICT VII.** (975), of the counts of Tusculum, and bishop of Sutri, reigned during 9 years with great ability and firmness. He was chiefly remarkable for his labors in establishing

canon law, and upholding ecclesiastical discipline. **IV. BENEDICT VIII.** (1012), also of the counts of Tusculum, and cardinal bishop of Porto. The celebrated German emperor, St. Henry, and his wife, St. Cunegunda, were crowned by him. He made 2 visits to Germany, during the latter of which he received the city of Bamberg as a present, afterward exchanged for Benevento. During his reign the Saracens attacked the pontifical states, but were defeated and driven away by the troops of Benedict, after a bloody and obstinate battle of 8 days. Pope Benedict introduced the custom at Rome of singing the Nicene creed during mass. After a very active and vigorous reign of 12 years, he died during the early part of the year 1024, and was succeeded by his brother, under the name of John XIX. **V. BENEDICT XI.** was of humble origin, and became at an early age a member of the Dominican order, in which he was promoted to the rank of general solely on account of his learning and piety. For the same reason he was afterward made cardinal bishop of Ostia, and frequently employed in important legations. He was a devoted and courageous partisan of his predecessor, Boniface VIII., and remained with him at Aragni, after all the other cardinals had fled. On the death of Boniface he was unanimously elected to succeed him (1308), and very soon settled all the difficulties between France and the holy see. This pope was remarkable for humility, and his great talent for pacification. On one occasion, when his mother presented herself at his court splendidly attired, he refused to recognize her until she had resumed the dress suitable to her humble state of life. He died at Perugia, in 1304, probably by poison. **VI. BENEDICT XII.**, a Frenchman by birth (Jacques Fournier), of humble origin, was a Cistercian monk, and afterward, successively, abbot, bishop, and cardinal. He was the third of the Avignon popes, having succeeded John XXII., in 1334. He was an eminent canonist and theologian, and has left several valuable works. As pope, he was animated by a great zeal for reformation, and was very severe on negligent and ambitious ecclesiastics. He defined, by a constitution, the doctrine previously construed by some, that the beatitude of the just, and the punishment of the wicked, commence before the final judgment. He died at Avignon in 1343. **VII. BENEDICT XIII.**, of the princely house of Orsini, born in the kingdom of Naples, became at an early age a Dominican, and, throughout his whole life, was remarkable for the strictness with which he fulfilled his religious duties. Having been with great reluctance elevated to the dignity of bishop and cardinal, he continued to live as a simple monk, and devoted all his leisure hours to study, writing, and prayer. As a bishop, he was devoted to his pastoral duties, and universally loved and venerated; and as cardinal, he led what was called the party of the Zelanti, who were pledged to vote at the conclave for the candidate deemed by the col-

lege of cardinals the most worthy, without regard to any worldly or political interest. He was chosen to succeed Innocent XIII., A. D. 1724, and accepted the papal dignity under obedience to the command of the general of his order, with many tears. The well-known saints, Aloysius de Gonzaga, John of the Cross, John Nepomucen, and Stanislaus Kortka, were canonized by him. His principal efforts were directed to restore and uphold ecclesiastical discipline, although he was deceived by a hypocrite named Nicholas Coscia, who abused his confidence, and was imprisoned for mal-administration by his successor. He died Feb. 21, 1730. **VIII. BENEDIOT XIV.**, the most distinguished of all the popes of this name, and one of the most able and learned popes of modern times. His name was Prospero Lorenzo Lambertini, and he was born of an ancient family at Bologna, A. D. 1675. From his youth he devoted himself to study and science, especially to canon law and theology, and became a voluminous author, his works being regarded as standard. After a long, useful, and laborious career, in different offices of the Roman prelature, he was finally made, in 1728, cardinal priest, and archbishop of Ancona, by Benedict XIII. In 1731, Clement XII. transferred him to Bologna, where he remained until his election to the papacy, which took place, most unexpectedly, Aug. 17, 1740. He was then 65 years of age, and he reigned 18 years. As pope, he was highly esteemed by all the contemporary sovereigns, Protestant as well as Catholic. During the intervals of public business he contrived to apply himself to his favorite studies, and maintained a correspondence with all the most eminent writers of the day. He was a great patron of science, learning, the fine arts, and charitable institutions. His quiet, tranquil life, full of great and good works, but devoid of striking and remarkable events, presents but few salient points. The unanimous judgment of mankind, however, pronounces him a great and good man. The complete collection of his works fills 15 folio volumes. He died May 2, 1758.—**BENEDIOT**, antipope, a native of Aragon; he styled himself Benedict XIII. His name was Pedro de Luna, and in his early life he was alternately a student and a soldier. He finally chose civil and canon law as his profession, and was professor of these departments at the university of Montpellier, when Gregory XI. made him cardinal. He was a man of eminent talents, and Pope Clement VII. sent him as legate into Spain. He was the patron of the celebrated St. Vincent Ferrer, who adhered for a considerable time to his obedience. In 1394, a portion of the cardinals at Avignon elected him pope, with the previous engagement to resign if the peace of the church required it. France, Spain, and some other portions of Christendom, acknowledged his obedience at first. Afterward, when the councils of Pisa and Constance, and the different

sovereigns who had supported him, required him to resign his claims to the papacy, he refused. Both councils condemned and excommunicated him as a schismatic, and the princes of his obedience abandoned him, and endeavored to take him prisoner at Avignon. He escaped, however, to Chateau-Renard, and afterward to Peniscola, a little town in the kingdom of Valencia, where he played the part of pope, with two cardinals, until he died in 1424, at the age of 90. He obliged his two cardinals to elect, as his successor, Gil Muñoz, a canon of Barcelona, who took the name of Clement VIII.

BENEDIOT, abbot of Peterborough, an English monk and historian, died in 1193. He studied at Oxford, became prior of the monastery of Christ church in Canterbury, shared the friendship both of Becket and King Henry, assisted at the coronation of Richard I., the Lion-hearted, under whom he was keeper of the great seal, and wrote histories which are still extant of Thomas à Becket, Henry II., and Richard I.

BENEDIOT, SAINT, born at Nursia in Umbria, A. D. 480, died March 24, 543. This patriarch of the western monks seems to have had an irresistible desire for contemplation, solitude, and the monastic life, from his childhood. His parents sent him to Rome to study, but his gentle, reserved, and modest temper, caused him to be disgusted with the vices and temptations he found there, and he fled to the desert of Subiaco, between Tivoli and Sora, where he commenced an eremitical life. After a time, he could no longer conceal himself or hinder a great number of persons from resorting to him, attracted by his sanctity and wisdom. He finally built a monastery on Mount Cassino, where there had formerly been a temple of Apollo. Here he laid the foundation of the Benedictine order, and presided as abbot during 14 years. There is still an extensive monastery on Mount Cassino, which is a favorite place of pilgrimage.

BENEDIOT, JULIUS, a German composer, born at Stuttgart, Dec. 24, 1804, of a Jewish family. Having shown an unusual talent for music, he was placed, while a boy, under the tuition of Hummel, with whom he made rapid progress. In 1820 he was so fortunate as to attract the notice of Carl Maria von Weber, who, contrary to his usual practice, willingly received him as a pupil into his house at Dresden, where he remained until the end of 1824 in the most intimate and affectionate relations with his illustrious master. At 20 years of age, on the recommendation of Weber, he was engaged to conduct the German operas at Vienna, whence, in 1825, he went to Naples to become musical director of the theatres San Carlo and Fondo. He remained here for nearly 10 years, and produced, among other works, "Giocenta ed Ernesto," "I Portoghesi in Goa," and "Un Anno ed un Giorno," which were too German in style to please an Italian public, although

some of them were subsequently performed in Germany and England with great success. In 1835, in accordance with a long-cherished desire, he visited England, where his reception was so flattering that he has continued to reside there ever since. After filling the position of musical director at the Lyceum theatre, in London, for 2 years, he turned his attention to the English musical stage, and in 1838 produced the "Gypsy's Warning," in 1844 the "Brides of Venice," and a year or two afterward, the "Crusaders," all of which were quite successful. In 1850, he accompanied Jenny Lind on her musical tour through the United States, as director of her concerts, of which the orchestra, drilled and conducted by him, was always a marked feature. Since his return to Europe he has resided generally in London, and is frequently before the public as director of some one of the great musical festivals which annually take place in various parts of England. Beside the works mentioned, Benedict has composed much music for the piano-forte, on which he is an admirable performer, and a number of orchestral and vocal pieces. His music is spirited, dramatic, and melodious, and so completely has he assimilated his style to English tastes, that he is considered more national than many native composers.

BENEDICT-BEUERN, a village of Bavaria, in the circle of upper Bavaria, noted for having once contained a Benedictine abbey, founded in 740. It has glass works of some celebrity, and quarries of marble. The village is situated in the neighborhood of the offshoots of the mountains of the Tyrol, one of whose summits, not far from the village, has an altitude of more than 6,000 feet.

BENEDICTINE ORDER, the most ancient and widely spread religious order of the western church, founded by St. Benedict. The monastic institution, which originated in the East, had taken root also in the West before the time of St. Benedict, chiefly through the influence of St. Athanasius and other prelates, who were either orientals or had visited the oriental monasteries; and also through the profound impression created by the life of St. Anthony. It was necessary, however, to modify very much the customs of the eastern anchorites, and to adapt the monastic rule to the character and habits of the people of the West, and also to their different climate. It was also requisite to introduce some regularity, and a fixed system of government, among the separate and disconnected religious communities. The rule of St. Benedict was accordingly drawn up by him, and generally adopted. His order spread rapidly and widely throughout western Christendom, and in its most flourishing period numbered 87,000 abbeys. In the reign of Henry VIII. there were in England 28 mitred abbots and 1 prior of the Benedictine order, who were peers of the realm, and sat in the house of lords. From this order have proceeded 24 popes, 15,000 bishops, and 40,000 canonized or beatified saints,

among whom are some of the most illustrious men that adorn the annals of the church, as, for example, St. John of Damascus and St. Bernard. It has had also among its members many imperial and royal princes, nobles, statesmen, and eminent warriors, who have retired from the world to the shadow of its peaceful walls. The rules of the Benedictine order are very few and simple, giving it a great flexibility, and power of adaptation to different countries and times. Hence we see it undergoing very great changes and modifications, and shooting out many branches from its parent trunk. From the beginning, the Benedictines devoted themselves very much to sacred science; and from an early period they also commenced a zealous cultivation of every branch of human learning and the fine arts. With these intellectual pursuits they united those of agriculture and gardening. This cultivation of science caused the custom to be early introduced of ordaining the Benedictine monks to the priesthood, contrary to the previous usage. For several centuries they were also the principal teachers of youth in all the branches of education, from the lowest to the highest, and possessed a vast number of colleges and schools. To their care and laborious copying of MSS., the world is indebted for the preservation and transmission of the entire body of classical and other ancient learning through the dark ages. In the ordinary course of things, the order became very rich and powerful, and following the general law of human institutions, fell to a considerable extent into a state of decadence from its primitive ideal. We therefore find, from the 9th century downward, very frequent and stringent measures of reformation adopted by popes, councils, and prelates, and, to a considerable extent, accepted and carried out within the bosom of the order. Reformers also sprung up within the bosom of the order itself, and new Benedictine families were formed on the basis of the ancient rule and discipline. One of these reformers was St. Benedict of Anani, called "the second Benedict," who died 821. The principal branches of the great Benedictine family which have sprung up in the course of ages, are, the Clunians, Cistercians, Camaldolese, Vallombrosians, Grammontensians, Carthusians, Fontevraudians, Bernardines, Gilbertines, Humiliati, Cœlestines, Feuillants, Trappists, Olivetans, and Benedictines of St. Maur. The latter are well known for their learned and magnificent edition of the fathers. —The number of Benedictine monks of the original stem, at the present time, is estimated at 1,600, and their chief seat is Monte Cassino. There is a large Benedictine community at Youngstown, in Pennsylvania, which is rapidly increasing, and has already sent out several smaller colonies. There are also two Trappist monasteries in the United States, one in Kentucky, the other in Iowa, each governed by a mitred abbot. The Trappists and Carthusians are the severest of all the Latin religious orders, and still preserve all their original

strictness and rigor.—BENEDICTINE NUNS have existed from an early period, and claim St. Scholastica, sister of St. Benedict, as their foundress, with great probability, although some dispute the existence of female convents under the Benedictine rule during the lifetime of St. Benedict. They have been widely spread in former times, and have undergone the same changes and revolutions as their parent order. At one time there were many convents into which only noble ladies were admitted, and these became so far secularized that they even ceased to take any vows, and left the order, and even married whenever they chose. Every reformed congregation of Benedictine monks usually had also female convents under its direction, which adopted a similar discipline. Two remarkable reformations sprung up in the female order itself, one under the direction of the high-born and saintly abbess, Antoinette of Orleans, who founded the congregation of Our Blessed Lady of Mount Calvary, in the 17th century; the other in the same century, under the abbess Mechtildis, who founded the congregation of the Perpetual Adoration.

BENEDICTION, the act of blessing, of wishing to a person or thing the grace of God. It has always existed as a custom among Jews and Christians. The Jewish priests bestowed benedictions upon the people when they remained obedient to the law, and maledictions when they neglected it. The patriarchs, when near their death, invoked blessings upon their children and family, and at the same time pointed out the son who should succeed as head of the family and tribe. The children of Israel having arrived in the promised land, were assembled between the mountains of Ebal and Gerizim, and from the summit of Gerizim benedictions were pronounced upon those who should observe the duties of religion; and from the top of Ebal, maledictions upon those who should violate them.—In the Roman Catholic church, benedictions are of several kinds, and are performed either by sprinkling holy water, by signs of the cross, or by appropriate prayers. Some are bestowed upon persons endowed with authority, or devoted to certain estates, as kings, queens, abbots, abbesses, virgins, knights; others upon objects used in worship, as vases, linens, ornaments, churches, cemeteries, water, oil; others upon objects of eminent use to men, as houses, ships, the sea, rivers, railroads, fire-arms, the nuptial ring, gardens, fountains, flocks, and fruits of the earth; and others, by the superior ecclesiastics, upon Christian people. Three times a year, from the balcony in front of St. Peter's, the pope solemnly gives his benediction, *urbis et orbi*, to Rome and to the world. The benediction of the Blessed Sacrament is one of the most solemn functions in the Roman Catholic church. The consecrated host is exposed on an elevated throne above the altar, being placed in an ostensorium for that purpose. Many lights are burn-

ing, incense is offered, hymns and prayers are sung, and finally, the priest blesses the people, by making the sign of the cross over them with the ostensorium. This ceremony is specially prescribed in Corpus Christi, but is used now very frequently in other festivals, and in many churches every Sunday after vespers.—In Protestant churches, the benediction is usually given in words similar to those prescribed by Moses to Aaron. It is often accompanied with laying on of hands, especially in the celebration of marriages, the ordination of pastors, the confirmation of converts, and the baptism of children.

BENEFICE (Lat. *beneficium*), an ecclesiastical living, originally including every species of preferment, as well those to which dignities and offices were attached, viz., bishoprics, deaconries, and prebends, as the lesser sort, viz., rectories, vicarages, perpetual curacies, and endowed chaplainries; but in its popular acceptance it includes only the latter class, and the distinction is recognized in recent acts of parliament. The name is derived from the *beneficium* of the Romans, which was a grant of an estate, privilege, or endowment of any kind to a subject by the sovereign. It was afterward the designation of a grant of land by any large proprietor to a retainer or follower as a reward of services, being the same that later was denominated a fief or fee, the essential incident of which was perpetuity, that is to say, it was a permanent stipendiary estate held of a superior, and usually subject to some condition indicating vassalage. The principle of the feudal tenure was applied, in the middle ages, to ecclesiastical benefices to this extent, that they were held of the pope, as a superior lord, though these benefices had not the hereditary character of a fee, so far as respected the office or dignity connected therewith, and the lands or emolument conferred by a grant were usually attached to such office or dignity, and on the death of the incumbent, reverted to the ecclesiastical superior who was entitled to appoint a successor. This, at all events, was the claim of the popes, though it was the subject of contest between them and the principal European sovereigns. When the term came to be applied to ecclesiastical grants, it was gradually disused in respect to all others, and the *feudum*, fee, was substituted.

BENEFIT OF CLERGY, in English criminal law, the *privilegium clericale*, exemption of the clergy from penalties imposed by law for certain crimes. This privilege no longer exists, but it was for many centuries an important element in the administration of criminal law, and still is a curious and instructive part of the history of England. The origin of this privilege was a claim made by the ecclesiastics at an early period for the entire exemption of their order from the jurisdiction of the common law courts. Before the Norman conquest, in the county courts, where the greater part of the civil business of the kingdom was trans-

acted, the bishop of the diocese presided with the sheriff, thus uniting civil and ecclesiastical authority, but the foreign clergy who came over with the Normans, and were installed in the chief preferments of the English church, obtained from William the Conqueror a separation of ecclesiastical courts from the civil. In the reign of Stephen, a still further innovation was made by giving sole jurisdiction to the bishop over ecclesiastical persons and causes. This gave rise to the contest between spiritual and temporal courts, and the breach was continually widened by jealousy of the Catholic clergy. The claim of exclusive jurisdiction was not successfully maintained, except in respect to ecclesiastical causes, but by various statutes and the popular regard for the church, which imposed some check upon the most arbitrary monarchs, the persons of the clergy were exempted from penalties for certain crimes; but though there was a constant struggle on the part of the clergy to assert this exemption on the ground that the clergy were amenable only to the ecclesiastical courts, it was as steadily resisted by the common law courts, and the privilege was allowed only in the cases specifically provided for by common law or statute. It is not easy in the conflict of jurisdiction, and the varying legislation of parliament, to determine how far the exemption existed by common law and how far it was enacted by statute. It did not extend to all crimes; and the distinction made can hardly be explained upon principle, but seems to have been in some degree arbitrary, or, perhaps, a compromise. Thus it was not allowed in high treason, nor in petit larceny, nor any mere misdemeanor (by which was meant petty crimes less than felony), and was, as a general rule, allowable only in capital felonies, but not all even of that class. The exemption was mainly founded on statute 25 Edward III., by which it was provided that clerks convicted for treason or felonies touching other persons than the king himself, should have the privilege of holy church. By the common law, benefit of clergy was denied in 8 kinds of felony, viz.: lying in wait for one on the highway (*insidiatio viarum*), ravaging a country (*depolutio agrorum*), and burning of houses (*combustio domorum*); and in all these cases, even after the statute above mentioned, the privilege continued to be denied. From time to time it was enacted afterward, in various statutes, that certain crimes should be without benefit of clergy, as murder, rape, burglary, larceny from the person, or from a dwelling house, any one being therein, and many other offences. As to the persons entitled to benefit of clergy, it was originally limited to such as had the *habitus et tonsuram clericalem*, that is, the regular clergy; but the claim being made in behalf of the retainers of ecclesiastics, and other laymen, who were not entitled to it, a test was adopted that only such as could read should be allowed the privilege. But, in the reign of Henry VII., it was

found that as many laymen as divines had by this test an exemption, and a law was then passed making a distinction between lay scholars and such as were in orders. The former were to be admitted but once to the benefit of clergy, and were to be subjected to a slight punishment, as burning in the hand, or perhaps this was merely intended as a permanent mark of having once had the benefit of clergy, so that the person should not be admitted to claim it again. The distinction was abolished in the reign of Henry VIII., but revived again by statute 1 Edward VI., by which it was also enacted that peers having a place in parliament should have the benefit of peerage, equivalent to that of clergy, for the first offence, although they could not read, and without being burnt in the hand, for all offences then clergyable to commoners, and also for the crimes of housebreaking, highway robbery, horse-stealing, and robbing of churches—a significant intimation of the state of morals among the highest nobility in that era. In the duchess of Kingston's case, it was held that peeresses were entitled to the benefit of the statute. The ordinary course when a claim was made to benefit of clergy was, after burning in the case of the laity, and without it in case of the clergy, to deliver the prisoner over to the bishop to be dealt with according to the canon law. Then followed a purgation, as it was called, that is to say, the offender was called before the bishop and required to make oath of his innocence, which was to be maintained by the oaths of 12 witnesses, called compurgators, that they believed him, upon which he was acquitted. This was the general result. The scandalous perjury and prostitution of the forms of legal proceedings exhibited in this mock purgation, induced the temporal courts to avoid it altogether, by delivering over the convicted clerk *absque purgatione facienda*—the effect of which was that he could not be relieved from other legal consequences of his crime, except the punishment of death. It was in consequence enacted by 18 Elizabeth, that the offender should be delivered out of prison with a proviso that he might, in the discretion of the judge, be kept in gaol a year. Thus the law continued for a long period without alteration, except the extension to all commoners not in orders, of the benefit of clergy in clergyable offences, subject, however, to being burned in the hand and imprisoned for a year. All these provisions of law still required, as the condition of exemption, that the person claiming exemption should be able to read, so that those who could not read (except peers) were hanged, to remedy which unequal severity it was enacted by 5 Anne that the benefit of clergy should be granted to all who were entitled to ask it without requiring them to read. Finally, by statutes 7 and 8 George IV., which is a revision of all the previous acts relating to crimes, the benefit of clergy was entirely abolished. In the United States this privilege

has never been recognized as existing. There is a single statute (act of congress, April 30, 1790), in which it is provided that benefit of clergy shall not be allowed for any offences punishable by death.

BENEKE, FRIEDRICH EDUARD, a German philosopher, born in Berlin, Feb. 17, 1798, found, after a long disappearance, drowned in a canal at Charlottenburg, June 4, 1858. After serving as a volunteer in the campaign of 1815, he studied theology and philosophy at Halle and Berlin, giving special attention to the English philosophers. In 1820 he lectured in the university of Berlin as a private teacher, but the continuance of his lectures was forbidden in 1822, on account of his departure from the philosophical principles of Hegel. He then taught for a few years in Göttingen, but, returning to Berlin in 1827, he then received permission to lecture in the university, in which he was elected extraordinary professor of philosophy after Hegel's death, in 1832. The starting point of his system is, that philosophy must be founded upon a strict and careful examination of the phenomena of consciousness. He thus adopts, in mental philosophy, the method observed by Bacon in the natural sciences, and his system is described as an empirical psychology.

BENEVENTE, a seaport town of Brazil, province of Espirito Santo, 47 miles S. of Victoria, at the mouth of the river Benevente, on the Atlantic.

BENEVENTO, a city of southern Italy; pop. 16,300; capital of the Roman delegation of Benevento. It is situated 82 miles N. E. of Naples, on elevated ground, near the confluence of the Calore and Sabato, and is built of the ruins of an ancient town, of which it occupies the site. It abounds in remains of antiquity. It has the arch of Trajan, now called the Golden Gate. This city, supposed to have been founded immediately after the Trojan war, was conquered by the Romans in 269 B. C., who, having just defeated King Pyrrhus beneath its walls, gave to it the name of *Beneventum*, or fortunate event. It belonged for a time to the Byzantine empire, but was taken by the Goth Totila in 545, and by the Lombards in 589, under whom it became the capital of a duchy. After the fall of the Lombard kingdom, it recovered its independence, but suffered many attacks from the Saracens, and was captured by the Norman chief, Robert Guiscard, in 1077, who transferred it to the pope. Four councils of the church were held here in the 11th and 12th centuries. In 1806, Napoleon instituted it a principality for Talleyrand. It was restored to the pope in 1815. In 1266, near Benevento, was waged the battle in which Charles of Anjou defeated Manfred, king of Naples. The delegation of Benevento contains an area of 90 sq. m., and a population of 20,500.

BENEVOLENCE, a system of loan to the crown without the sanction of parliament practised by several British monarchs, in defiance of *Magna Charta*. Henry VII. levied it successfully. Elizabeth tried it, but wisely withdrew

from the contest with her subjects. James I. raised the doctrine of prerogative to a higher pitch than had ever been tried, and Charles I., by his royal exactions, dispensing with the power of the parliament, and by imprisoning the recusants, brought upon himself all the calamities of his life. The petition of right disclaimed the king's authority to levy taxes without the consent of parliament, and the bill of rights, in 1688, renewed its provisions, and placed the power of the purse in the hands of parliament.

BENEZET, ANTHONY, an American philanthropist, a native of France, born at St. Quentin, in the province of Picardy, Jan. 31, 1718, died in Philadelphia, May 5, 1784. He was of a wealthy and noble Protestant family, which fled from France to Holland, and thence to England, in 1715, after the revocation of the edict of Nantes. In London the family adopted the religious opinions of the Quakers, and they removed from that city to America in 1731. Young Anthony was placed by his parents in a counting-house, but finding that commerce offered temptations to a worldly spirit, he left his master, and bound himself as an apprentice to a cooper. Finding this business too laborious for him, he declined it, and, in 1742, accepted the appointment of instructor in the Friends' English school, of Philadelphia. The employment of a teacher of youth accorded with his inclination, and he cheerfully devoted to it the greatest part of his life. "Few men," says Dr. Rush, "since the days of the apostles, ever lived a more disinterested life." One of the first objects of his enthusiastic philanthropy was the abolition of the slave-trade, and the emancipation and education of the negroes. To this end he opened an evening school in Philadelphia for the negro population, and published several valuable tracts. His style was forcible and fervid, and he distributed his works at his own expense throughout every part of the United States, and sent letters directly to the queen of Great Britain and the queen of Portugal, begging them to use their influence to abolish the African trade. He was interested, also, in behalf of the aborigines of America, and urged the adoption of measures for their civilization and Christianization. During the terrific campaigns of Frederic the Great, of Prussia, he wrote a letter to that monarch, in which he endeavored to convince him of the unlawfulness of war. While the British army was in possession of the city of Philadelphia he was indefatigable in his efforts to relieve sufferings, and his courage and gentleness secured the civilities and respect of the British and German officers, even when they were unable to grant his requests. So great was his sympathy with every thing that was capable of feeling pain that he resolved, toward the close of his life, to eat no animal food, and this misapplication of a moral feeling was, probably, the cause of the disease of which he died. He resigned his school 2 years before his death, in order to devote himself wholly to the instruction of the blacks, and, after the death

of his widow, he bequeathed his entire estate for the support of a school for the education of negro children. His funeral was attended by persons of all religious denominations, among whom were several hundred negroes. The worth of Benezet's writings is alluded to by the British philanthropist, Clarkson, who confesses that one of them enlightened his own mind and quickened his zeal in the early part of his life. The character, at once acute and benevolent, of Benezet, is revealed in his remarkable saying, that "it is the highest act of charity to bear with the unreasonableness of mankind."

BENGAL, one of the 3 presidencies of British India, and the most important division of Hindostan. In 1854, excludng the possessions of the native princes, the presidency was estimated to contain 225,000 sq. m., lying between lat. 10° and 28° N., and long. 83° and 99° E. Since then large accessions of territory have been made, one of the latest of which is derived from the mediatisation of the king of Oude.—The province of Bengal, lying almost entirely within the tropics, is subjected to great extremes of heat, the climate having proved more dangerous to Europeans than almost any other in British India. Sanatoriums have, however, been established among the mountain regions of northern India, to which invalids are accustomed to retire and enjoy the bracing airs which there visit them, as in a temperate zone. Many years ago, Calcutta, situated in the south-eastern quarter of Bengal, was considered one of the most unhealthy spots on the globe, but, in the course of time, a temperate and regular mode of living, and better knowledge of the diseases of the country, have been introduced, while, by the draining of marshes, cutting of canals, clearing the grounds of trees and jungle, the climate has been greatly improved. The seasons in Bengal are commonly divided into the hot, cold, and rainy, the hot season setting in in March and continuing to the end of May, when the weather becomes nearly intolerable, even to the native. The thermometer frequently rises to 100°, and even to 110° F. During this period the troops are not employed on active service if it can be avoided, and it is often found among those merely standing on guard that their dresses are dripping wet with perspiration at midnight. In the middle parts of Bengal this terrific heat is mitigated by occasional thunder storms, with rain and hail, but in the districts contiguous to Bahar a scorching west wind blows during the whole season. The rainy season begins in June and lasts 4 months. The rain is heavy and constant; as much as 5 inches has sometimes fallen in one day, and during the last 2 months alternate fogs and rains prevail, rendering the state of the atmosphere indescribably unpleasant. The setting in of the S. W. monsoon, about the beginning of June, is accompanied by awful thunder and lightning. The cold season, from November to the latter part of February,

is pleasant, the thermometer often sinking as low as 70° F.—The general aspect of Bengal is that of a level country, intersected by numerous rivers and encompassed by lofty ranges of mountains. That part of the Delta watered by the Ganges as it approaches the sea is a perfect labyrinth of creeks and rivers, of jungle and stagnant waters, called the Sunderbunds, a region infested with tigers, and producing inexhaustible supplies of timber. At the annual inundation this region presents the appearance of a vast inland sea, when a curious spectacle is displayed to the stranger, of fields for hundreds of miles covered with water, the rice rising above it, the enormous dikes built to restrain the floods, and the boats floating in immense numbers. This region, lying between the rivers Hoogly and Chittagong, abounds in quantities of salt sufficient for the entire wants of Bengal. Into these Sunderbunds the waters of the 2 mighty rivers, the Ganges and the Bramapootra, meeting, pour their streams, after traversing Bengal in opposite directions, from points 1,200 miles asunder. Many navigable streams pour into these rivers, affording the most ample internal communication.—The soil of Bengal in general is a mixture of clay with sand, fertilized by various salts and an immense quantity of decayed animal and vegetable substances. It is a rich black mould, very deep, and loose in its texture, bearing incontestable proof of a country redeemed from the sea, as the bed of sand on which it lies contains shells, and frequently pieces of rotten wood. Even boats and anchors, buried at some remote period, have been found. The whole of the soil of Bengal is characterized by amazing fertility, and this quality, in no little degree, is owing to the annual inundation of the Ganges and other great rivers. The lands are very easily cultivated, and yield prolific crops without any manuring beyond that deposited by the inundation. The principal crop is rice, but very good wheat and barley are grown, and various kinds of pulse are raised in great abundance, such as peas, kidney beans, &c., while maize, millet, and other small grains, the food of the poorer classes, are generally sown, especially in the hill regions of the west, and the immense and universal consumption of oil by the natives causes the cultivation of mustard, sesamum, linseed, &c., to be largely attended to. Bengal husbandry, among the natives, is still in a very primitive state. The plough is a rude contrivance, drawn by one pair of oxen, who are relieved by others until the day's ploughing is completed. Weeding, after the crops have risen above ground, is performed by means of a short spade, the laborers sitting down to their task. There are 2 seasons of reaping, one in April, called the little harvest, for the smaller grains, and the great harvest, which is wholly for the rice, of which, however, there are 3 crops sometimes in a year. Different crops are sometimes sown together in one field, which are greatly injured by successive ripening and gathering. After the corn of all kinds is reap-

ed, it is piled up in the fields without any defence from the weather, until the husbandman finds it convenient to thrash it out. The grain, after winnowing, is stowed away in unbaked earthen jars or baskets of twigs, in round huts, with their floors elevated a foot or two above the surface of the ground to exlude the dampness. But, with all the fertility of the soil and favors of the climate, agricultural knowledge stands at a very low point in Bengal, as in other parts of India. No sufficient care is bestowed, either on the selection of grain or the best time of sowing. The implements are few and imperfect, the rotation of crops little understood, no manure is applied, except to the sugar-cane, mulberry, poppy, and tobacco. The dung of animals is not collected, but used for fuel. The country is without enclosures, and the roads are usually in wretched order. The principal vegetable productions, beside grain and pulse, are tobacco, cotton, indigo, mulberry, poppy, plantains, pumelos or shaddocks, limes, oranges, pomegranates, pineapples, bananas, the banian tree, the cocoanut, which supplies a kind of cordage made from the fibres of its palm, sugar-cane, which thrives exceedingly well, the betel vine, which produces the betel pepper, mangoes, date trees, the areca, &c. The potato has been introduced and cultivated with much success. There are also many kinds of flourishing shrubs, which either grow wild or thrive with very little care. The most important of the commercial crops are those of tobacco, the opium poppy, sugar, indigo, cotton, and silk. Coffee has also been successfully introduced, and tea is largely cultivated in the districts of Assam. Immense plantations have been stocked with tea-plants from China, and laborers imported from the green and black tea countries of the celestial empire. Mr. Robert Fortune's efforts in this respect have been worthy of all praise, and there is every reason to believe that the cultivation of tea will annually increase, and become a very important item in the Indian revenue. Tobacco was not known in India until after the discovery of America, but is now grown everywhere. Sugar-cane, on the contrary, has been cultivated in Bengal from remote antiquity, and there is now scarce a district in which it is not grown; it is cheaply manufactured, and now enters English markets on the same terms with that of the West Indies. Indigo is a very important article, of which Bengal supplies about five-sixths of the production of the whole world. Cotton is abundantly raised, but the demand is equal to the supply, and it cannot at present at all compare with the product of the American states. Silk has been produced in Bengal for many centuries, the knowledge of it having doubtless been introduced from China. The raw material was at first carried to Europe, into Greece and Italy, and the first silk manufactories known in Europe were established in Greece, by the emperor Justinian. Wild silk-worms are found in countries border-

ing on Bengal, from which a coarse species of silk is produced, but by no means equal to that of the domesticated insect. The cultivation of the poppy is entirely a government monopoly, contracts being annually formed with poppy growers to sow certain lands with the plant, and deliver the opium to the government, at a set price. The plants are sown in November, arriving at maturity by Feb. 2. The opium produced in Bengal alone, amounts to the sum of \$10,000,000 to \$15,000,000 annually.—Wild animals abound, such as boars, bears, wolves, jackals, foxes, hyenas, leopards, panthers, tigers, lynxes, hares, deer, zebras, wild buffaloes, antelopes, apes and monkeys, and elephants, the last of which are domesticated in great numbers, and prove eminently useful for military and civil purposes. The royal Bengal tiger is best known of all the untamable animals of India; it appears to have been familiar to the ancient Romans, and is described by Seneca as *Gangetica tigris*. It is of an immense size, and such prodigious strength that it can readily carry off a bullock. The native horses of Bengal are thin and ill-shaped, but those in use among the rich natives and the Europeans are of Persian or Arab stock, and are valued highly. The breeds of cattle and hogs are poor; goats and sheep thrive better, but the latter are small and lank, with coarse, thin, and hairy wool. Game, poultry, and various kinds of water-fowl, are found in the greatest abundance; ducks of many varieties of excellence, and the common domestic fowls of Europe, run wild in the jungles. Crows, kites, and sparrows, are found about the dwellings of the Bengalese, enjoying the utmost freedom in security. A large species of stork is known as the "adjutant," from its military strut and erect attitude, which walks about at its ease and devours quantities of snakes, toads, and lizards. Among the feathered tribes, many of the birds are distinguished by splendid plumage.—The inland-commerce of Bengal is chiefly carried on with Agra, Thibet, and Delhi. The principal articles of trade are silks, calicoes, muslins, saltpetre, opium, indigo, sugar, gum lac, and a variety of piece goods, nearly all of which now pass through the hands of the East India company. Grain from the corn countries, and salt from other districts, form the general articles of trade in the hands of the natives. Cotton is imported from the western provinces, and an exchange of tobacco and betel nut carried on. Part of this merchandise is transported by land carriage, but by far the greater part by water. The roads are generally in bad condition, and the noble causeways formerly constructed by the native princes have fallen into ruin. Such disadvantages are, however, amply compensated by the facilities of water communication, the numerous branches of the Ganges and Bramapootra being so completely diffused over a level country, that scarcely any village in the province is more than 20 miles remote from a navigable river. The wood, salt, and provisions of many millions of people,

are conveyed along these channels by 80,000 to 40,000 boatmen, who are the most laborious and hardy of the whole people of Hindostan.—Cotton piece goods form the chief manufacture of Bengal, but not nearly to the extent that formerly prevailed, as the use of such goods is almost entirely abandoned in British markets, and even with the natives the cheaper productions of Great Britain have superseded them in a great measure. In the eastern quarter of Bengal the district of Dacca has long been famous for its manufacture of plain muslins, known by various names, according to the fineness of the different qualities, as well as beautiful varieties of striped and flowered muslins. Coarse handkerchiefs and turbans are made in almost every province. A very extensive commerce prevails with Great Britain, in all the staple articles of cotton, silk, sugar, rum, and indigo. The imports are of wrought and unwrought metals, woollen and cotton goods, and, in short, almost every article of British manufacture. Rice is exported to Ceylon, cottons to Malabar, and silk to Surat; from which are usually brought in return considerable quantities of raw cotton to be employed in the manufactures of Bengal. Rice, cottons, and gum lac go to Bassorah, in exchange for dried fruits, gold, and rose-water, and a variety of rich merchandise is sent to Arabia, receiving in return chiefly gold and silver. But the maritime trade of Bengal has never been as extensive as the inland.—Prior to the British conquests, all the lands in Bengal, as in other parts of India, were farmed out by the nabob, on condition of a certain fixed sum being paid into his treasury, to rajahs and zemindars, who collected the rents from the immediate cultivators of the soil. The titles of the parties were not well defined, and under the evil system of the native rule, all justice was frequently lost sight of. When the British became conquerors, a question arose as to who were the real proprietors, the cultivators or the zemindars. It appears that as long as the tax, which was assessed at a certain rate, was regularly paid, the occupiers of the land were at least secured in the possession of their property, and disposed of or transmitted it to their descendants for generations. The government, however, looked to the zemindar for the immediate payment of the tax. In 1793, Lord Cornwallis introduced the permanent settlement, whereby the state bound itself not to increase the tax on the land at any future period. This measure, doubtless intended to protect all classes, the ryot or cultivator as well as the zemindar, has not done so, however, as the zemindar has been elevated from the rank of a revenue agent to that of a landlord, and the power in his hands of extorting almost any sum from the ryot that his avarice may dictate, has frequently led to frightful abuses and cruelties.—The following table, taken from Thornton's Gazetteer of India (Lond. 1857), will give the best idea of the size and population of the districts of the presidency in the lower provinces.

Districts.	Area in sq. miles.	Population.
Jessore.....	8,512.....	321,744
Twenty-four Pargannahs.....	2,277.....	701,138
Burdwan.....	2,322.....	1,254,152
Hooghly.....	2,007.....	1,520,840
Nudda.....	2,942.....	228,726
Bancoora.....	1,476.....	480,000
Baraset.....	1,494.....	522,000
Bogilpoor.....	7,808.....	2,000,000
Dinagepoor.....	3,520.....	1,300,000
Monghir.....	3,522.....	300,000
Poorneah.....	5,712.....	1,600,000
Tirhoot.....	6,114.....	2,400,000
Malda.....	1,233.....	421,000
Cuttack.....	8,061.....	1,000,000
Pooree.....	1,768.....	.....
Balasore.....	1,576.....	554,895
Midnapoor and Hidgelee.....	5,029.....	664,525
Koordah.....	920.....	571,160
Moorshedabad.....	1,356.....	1,045,000
Bagoorah.....	2,160.....	900,000
Rungpore.....	4,180.....	2,352,000
Rajahye.....	2,034.....	671,000
Pubna.....	2,606.....	600,000
Beerbhoom.....	2,114.....	1,040,576
Dacca.....	1,900.....	600,000
Fureedpoor and Deccan Jelalpoor.....	2,052.....	855,000
Mymensingh.....	4,712.....	1,487,000
Sylhet, including Jyntia.....	8,424.....	880,000
Beckergeunge, including Deccan Shabarpoor.....	8,794.....	733,900
Shahabad.....	4,408.....	1,600,000
Patna.....	1,523.....	1,200,000
Bahar.....	5,694.....	2,500,000
Barun, with Champaran.....	6,394.....	1,700,000
Chittagong.....	2,717.....	1,000,000
Tiperah and Bulloah.....	4,350.....	806,950
The Sunderbunds.....	6,500.....	[unknown]
Cossyah Hills.....	729.....	10,925
Cachar.....	4,000.....	60,000
Taleram (Benaputty Territory).....	2,160.....	5,015
Lower Assam { Camroop.....	2,788.....	300,000
Nowgong.....	4,160.....	70,000
Durrung.....	2,000.....	30,000
Joorhat.....	2,325.....	200,000
Upper Assam { Soobpoor.....	2,250.....	30,000
Luckempoor.....	2,250.....	30,000
Sudya, with Mutruck.....	6,943.....	30,000
Goalpara.....	3,506.....	400,000
Aracan.....	15,164.....	321,523
Sumbulpoor.....	4,698.....	274,000
Rangurh.....	3,524.....	572,216
Lohurdugga { Chota Nagpoor.....	5,808.....	422,900
Palamow.....	3,463.....	.....
Singbloom.....	2,944.....	200,000
Maunbhoom { Pachete.....	4,792.....	772,840
Barabhoom.....	860.....	.....
Total.....	203,246.....	40,871,091

The principal cities of Bengal and their population, are: Calcutta, 418,182, by the census of 1850; Moorshedabad, 150,000; Dacca, 60,000; and Burdwan, 54,000. From the great fertility of the soil and the slight vegetable diet required by the natives, it is calculated that Bengal might easily support double its present population. This now consists of about $\frac{2}{3}$ of native Hindoos, and $\frac{1}{3}$ of Moguls. The Moguls are the descendants of those who conquered the whole empire of Hindostan, more than 8 centuries ago, and who were originally natives of Tartary. In the eastern districts of Bengal they are very numerous; they are all Mohammedans, and hold the religious rites of the Hindoos in great abhorrence. As a people the Hindoos are slender, handsome, and well shaped, of a dark brown and sometimes a yellowish complexion, with black straight hair. Most of them shave their heads, and pluck out the hair from all parts of their bodies. Those

of the lower ranks go almost naked, wearing simply a cloth around the loins; those of higher order use turbans, and long dresses of white cotton. The female costume consists of loose drawers, a coat, and a mantle of cotton cloth worn over the shoulders. Their heads are uncovered, and their hair is worn fastened up behind with a profusion of ornaments, which they are fond of scattering over every part of their bodies. The character of the Bengalee cannot be rated high; the males are cunning, deceitful, and treacherous, and the women generally divide their time between their passion for dress, and their fondness for intrigue.—The English established their commercial intercourse with Bengal at a very early period, and made their first settlement on the Ganges in the beginning of the 17th century. This was at Hoogly, about 26 miles above Calcutta. By means of their fort and armed force, they protected their vessels which came down from Patna from the demands of the rajahs, and in the beginning of the 18th century they obtained from Ferokeera, the great grandson of Aurungzebe, a firman, exempting them from all duties, and this was regarded as the company's commercial charter. From the year 1742, they repelled frequent attacks from the Mahratta princes and the nabobs of Bengal, but the famous battle of Plassey, gained in 1757 by Lord Olive, with 3,200 men, only 900 of whom were Europeans, over the nabob's army of 50,000 foot and 18,000 horse with 50 pieces of cannon, laid the foundation of the British empire in India. In 1765 the English assumed the entire government of the province, receiving from the Mogul, Shah Aulem, a grant of the entire revenues of Bengal, Bahar, and Orissa, on condition of paying him 26 lacs of rupees, amounting to about \$1,800,000, per annum. The power of the company in Bengal, as in other parts of India, has been almost wholly gained by usurpation and violence, and there is much difference of opinion whether the condition of the natives has been improved under its rule. It has been contended with much force by able writers of England as well as other countries, that the people have been crushed and not elevated by their Anglo-Saxon masters. That there has long existed a great deal of ill-feeling which needed but some slight provocation to display itself, is proved by the extraordinary mutiny which began in 1857, among the native regiments of Bengal, and which will be fully treated under the title **HINDOSTAN**.

BENGAL, BAY OF (Lat. *Gangeticus Sinus*), a gulf of the Indian ocean, embraced between the peninsula of Hindostan on the W. and the coast of Lower Siam, Tenasserim, Pegu, and Aracan on the E. With the exception of the Arabian sea, it is the largest indentation on the southern coast of Asia, its width at the broadest part, *i. e.* from Cape Comorin at the S. extremity of Hindostan, to the same latitude on the coast of Siam, being 1,400 m. From this point it continues of nearly uniform width to

Cape Negrais, in lat. 16° 1' N., whence it contracts until the opposite coasts are but 250 m. apart, and terminates in an inlet or indentation of its N. shore, about 50 m. wide and thickly studded with islands. All that part of the bay lying south of the parallel of Cape Negrais is distinguished by some hydrographers as the sea of Bengal. It receives the waters of many important rivers, among which are the Ganges, Bramapootra, Hoogly, Irrawaddy, Godavery, and Kistnah. The tide in some places rises at times 70 or 80 feet. On the W. coast there are no good harbors, and no soundings at the distance of 30 m. from land, but on the E. side there are several safe ports, and soundings within 2 miles of the shore. The S. W. monsoon begins to blow on the W. or Coromandel coast about the end of March or early in April. In June it acquires its greatest strength and regularity; in September it subsides; and in October the N. E. monsoon commences, from which time till Dec. 1, navigation in the gulf is fraught with great danger. During the prevalence of both these winds a heavy surf rolls along the entire western coast, rendering access to the rivers extremely difficult.

BENGALÉE, or **GAURA LANGUAGE**, **THE**, is one of the 5 modern languages of Hindostan, which are derived from the ancient Sanscrit. Its name is derived from *Banga*, the Sanscrit name of the country, with the Arabic article *al* suffixed; the whole being corrupted into the present form. *Gaura* is derived from *Gaur*, the name of the ancient metropolis. It is spoken by 25 millions of British subjects, of whom about one-fourth speak also some other dialect. It extends over the regions on the lower Ganges, from Patna down to its delta; being purest in the province of Bengal, and in the eastern regions. One of its dialects, the *Mait'hila*, or *Tirutiya*, is spoken in the Sircar Tirhut, as far northward as the Nepalese Himalaya. The Bengalee name of the country is *Anggo*. This language consists of an aboriginal basis, with which a much greater portion of Sanscrit and Pracrit has been admixed than with that of any of its cognates; with a considerable addition of Afghan, Persian, Arabic, Portuguese, Malay, and English words. Although the Sanscrit element predominates, as regards the words, the grammatical forms of the language differ more from Sanscrit than the forms of the Greek, Latin, Gothic, and Persian; most of the flexions of nouns and verbs having been lost, and their places being supplied by auxiliary words, and by circumlocution. Notwithstanding this, it admits, in the higher style, many of those forms, which are intelligible only to more cultivated persons. There are no forms of gender, and only few feminine words are formed by the suffixes *ī* and *īni*. There are 7 cases made by suffixes—nominative, accusative, instrumental, dative, ablative, genitive, and vocative. The plural of nouns is made by suffixing *dig* to the genitive singular. It delights in compound words, formed especially by means of

a sort of past participle; elegant Sanscrit compounds being unidiomatic. There is but one conjugation, whose radical is the imperative. Compound tenses are made by the auxiliaries, meaning *to do, to be, to become*. Only the 8 verbs meaning *to give, to come, and to go*, are irregular. The singular and plural of verbs are often confounded; the plural with a singular noun denoting respect, the singular with the plural noun being used in speaking to inferiors. There are 8 simple moods, infinitive, indicative, imperative; 4 others being periphrastic, the potential, optative, inchoative, and frequentative. Any verb is conjugable negatively by the suffix *nd*. The system of writing is that of the *devanāgarī* (divine city's writing) of the Sanscrit language, but the forms of letters are more broken and twisted. B and v, however, are written by one character, and the characters of the sounds, s, z, sh, are interchangeable.—No book written in Bengalee appeared before A. D. 1500. After the settlement of Moslems in Gaur, the Voisyas and Soodras (agricultural and servile castes) began to study Persian, to gain a livelihood, and were well rewarded by the conquerors. Historical works appeared about 380 years ago, written by the followers of Chaitanya, the founder of the Voishnava sect. Several religious essays were written soon after. A Bramin abridged the *Mahābhārata*; Kirtivasa translated the *Rāmāyana*. Both are ancient Sanscrit epic works. Except the stories of Krishna's study, the rules of arithmetic in verse, and a few other elementary books, the vernacular literature was very poor, until Rajah Krishna-chandra Roy Bahadoor restored Hindoo literature in India, by bringing in pundits and endowing schools. His endeavors bore ample fruit, and many Bramins now earn money by literary mendicacy, for the sake of supporting pupils. Owing to the abundance of Sanscrit books, and the prejudice of most Bramins against the Bengalee, this was neglected until 1800, when the college of Fort William was founded, and the study of Bengalee was made imperative and collateral to the Sanscrit, Dr. W. Carey being the first professor of both. Among others, the head pundit of the college, Mrity-unjoy Vidyalankar, was distinguished in promoting his native literature. Many Bengalee works have since been printed at Calcutta and Serampore. The first native newspaper was published by Mr. Marshman at Serampore, 1818. Considerable change has been made since in the diction and composition of this language, which continues to be enlarged and ennobled, by being capable of borrowing indefinitely from the venerable Sanscrit mother. Gilchrist, H. P. Forster, Carey, W. Morton, Hunter, Mohun Persaud, Tahir, Tarachand Chukruburti, Sir G. C. Haughton, have published Bengalee-English dictionaries and vocabularies, and Ram Comul Sen has translated Todd's edition of Johnson's English dictionary into Bengalee.

BENGALÉE YEAR, one of the solar years of India, apparently dating from the Hegira

(the Bengalee year 1264 commencing in April, 1857); but starting from the Mohammedan lunar year apparently about the middle of our 16th century. See CHRONOLOGY.

BENGAZI, a town of Tripoli, province of Barca; pop. 2,500. It is on the site of the ancient Berenice, and is a mean Arab town in a state of great filth and wretchedness. The remains of the ancient city lie all around a little below the surface. There was formerly a good harbor, but a reef of rocks at the entrance prevents its easy access, and the accumulations of sand deposit have nearly choked it up.

BENGEL, JOHANN ALBRECHT, a German Lutheran theologian of the 18th century, born at Winnenden, Württemberg, June 24, 1687, died Dec. 2, 1752. He entered the theological college of Tübingen in 1708. He distinguished himself as a Greek scholar, and early exhibited a predilection for critical study. He began his career as a theological writer by a treatise on the holiness of God. He was the author of several very important works, but that on which his fame as a scholar principally depends is his edition of the Greek Testament, which was published in 1734. It produced a sensation in the theological world, and was one of the most valuable contributions to theological literature which the century afforded. No German theologian has infused more of his spirit and sentiments into English theology, if we except Luther, than Bengel. His edition of the Greek Testament, preceding those of Wetstein, Griesbach, Lachmann, and Scholz, was severely criticized by many eminent scholars, such as Michaelis, Baumgarten, and others. Bengel also wrote a work on the Apocalypse, in which production, one writer says, he exhibited an enthusiasm akin to the inspiration of the revelator himself. He considered the Apocalypse as the key to all prophecy, and believed that any right exposition of it would unseal the entire future history of the world up to the end of time. He thought he discovered in the mystical figures of the seer of Patmos that the world would end in 1836. He was occupied to the last in his critical studies, and died almost with his proof-sheets in his hands.

BENGER, ELIZABETH OGILVY, an English authoress, born in Wells, 1778, died Jan. 9, 1827. At the age of 18, the death of her father, a purser in the British navy, left her and her mother in very narrow circumstances. Six years later, she removed to London, where she became known to Campbell, the poet, Miss Joanna Baillie, Miss Aikin, Dr. Aikin, Dr. Gregory, Mrs. Elizabeth Hamilton and others. At the age of 13, she had shown her literary taste by writing a poem called "The Female Geniad," which was published. After her removal to London, she attempted prose fiction, poetry, and the drama, but without much success. It was as a biographer that she first obtained reputation. She produced in succession, memoirs of Mrs. E. Hamilton, of John Tobin, the dramatist, of Klopstock and his friends, of

Anna Boleyn, of Mary, queen of Scots, of Elizabeth, queen of Bohemia. When she died, she had made some progress in memoirs of Henry IV. of France. Miss Benger's style is clear, and her industry in collecting facts was undoubted. Her life was one long illness, and the very act of putting her thoughts upon paper was a painful task.

BENGUELA, a maritime country of western Africa, between lat. 9° and 16° S., and long. 12° and 17° E. The climate causes fever, the temperature varying from 94° to 105° F. in the shade. The surface is mountainous. The soil is well moistened and highly fertile. It produces fruits and European vegetables in abundance. The hills yield copper, sulphur, petroleum, and gold. Beasts of prey, including the lion and hyena, are numerous. The prevailing religion is fetichism. The government of the province is in the governor general of St. Paul de Loando. The Portuguese occupy some settlements in the province, beyond which their control does not actually extend. The chief of these is New Benguela, or St. Philip de Benguela, which is a seaport town, on the Atlantic, near the river Catumbella, lat. 12° 38' 9" S., long. 18° 25' 2" E. It is the Portuguese capital of the district, and has a very commodious harbor. Its principal inhabitants are slave dealers. It has more ruined than inhabited houses, and has not a single place of instruction. Old Benguela, formerly the capital of the district, lies on the coast 182 miles N. N. E.

BENI, or **VENI**, a river of Bolivia, South America. It is formed by the junction of 2 small streams among the mountains lying S. E. of Lake Titicaca, thence it runs N. through the intendency of La Paz, curves to the N. E., and on reaching the confines of Brazil unites with the Mamore to form the Madeira. The surrounding country is level, very fertile, and inhabited by tribes of Indians, many of whom are in a barbarous state. Gold is found along its shores, and its waters afford fine fish.—A department of Bolivia, on the river Beni; its principal towns are Trinidad and Loreto. An English colonization company has received a grant of a large tract of land in this department.

BENI-HASSAN, a village of central Egypt, on the Nile. In its vicinity are a number of sculptured grottoes.

BENI-ISGUEN, a town of Algeria, in the Sahara desert. It is strongly built, surrounded by a wall with 5 towers.

BENI-SOUEF, or **BENI-SOUFE**, a town of Egypt, on the Nile. It has large cavalry barracks, cotton mills, and alabaster quarries, and is the entrepot for the produce of the rich valley of Fayoom. Pop. 5,000.

BENICIA, the former capital of California, shire town of Solano county; pop. in 1854, about 2,000. It is on the strait of Karquenas, which connects San Pablo and Suisun bays. The land, for about a mile from the town, is level or gently undulating. Beyond this tract are hills, and still further back a succession of hills and

valleys. The valleys are capable of cultivation, but in and around the town there is not even a tree to be seen. The houses are of wood, and present a neat and respectable appearance. While the legislature held its sessions here, there were several large hotels; commerce flourished, and building was carried on with great rapidity. The capitol is a handsome brick edifice, on the brow of a slope about half a mile from the river. The facings are of stone, brought from an inexhaustible quarry a short distance below the town. This stone is of a light brownish color, soft, easily wrought, and hardening with age or exposure. The harbor is capable of accommodating ships of the largest size. The works of the Pacific mail steamship company, with founderies and machine shops, a navy station, and an arsenal, are in the town or its environs. Several steamboat lines, running between San Francisco and Sacramento, touch at Benicia.

BENIN, a kingdom of western Africa, in upper Guinea, bordered by the bight of Benin. Its extent is not known. Its coast is thickly indented with estuaries of considerable expanse, and studded with isles. The surface is level for a certain distance inland. Further in it rises to an elevation of 2,000 and 3,000 feet. It is thickly wooded. The soil is profuse in all the vegetable growths of the tropics. It is laid out in square plots, which produce gums, plantains, maize, and sugar-cane of excellent quality. Cotton is indigenous. The government is native, and the most revolting cruelty is characteristic of it and the people. Their religion is fetichism. Human sacrifices are numerous. The country is the seat of an extensive traffic in slaves, and of a limited trade in salt, palm oil, and blue coral.—Its capital is Benin, a large town, pop. 15,000, on the right bank of Benin river, one of the mouths of the Niger. Benin was formerly the great emporium for slaves. The palace of the king outside of the city is defended by walls. The houses of the city are built of clay, thatched with reeds, straw, or leaves. They are irregularly distributed. The city is a busy mart for cattle, sheep, goats, pigs, poultry, yams, cotton, ivory, European wares, and fruits. Belzoni, the celebrated traveller, died near this place in 1828.—**BENIN RIVER**, in the kingdom of Benin, upper Guinea, one of the mouths of the Niger. It discharges into the gulf of Guinea, 180 miles below Benin, and 120 N. N. W. of Cape Formosa. Lat. (entrance N. W. point), 5° 46' N., long. 5° 4' E. It is 2 miles wide at its mouth, across which is a bar, with 12 feet of water at spring tides. It divides into 2 branches, which have been explored to the distance of 50 and 70 miles respectively, the dense vegetation prevented further progress.—**BIGHT OF BENIN**, the northern portion of the gulf of Guinea, between the Slave coast and Calabar river. Many rivers empty into it, but the natural facilities for commerce are very limited.

BENIOWSKY, **MORITZ AUGUST VON**, an ad-

venturous Hungarian, born at the village of Verbova, Hungary, in 1741, died May 28, 1786. The son of an Austrian general, he served as lieutenant in the 7 years' war, and in the Polish war against Russia. In 1769 he fell into the hands of the Russians, who exiled him to Kamtchatka. Availing himself of a knowledge of navigation which he had acquired, he succeeded in saving the vessel which was to convey him to Siberia from wreck. This feat won for him the sympathy of the governor of Kamtchatka, which was still more strengthened by his proficiency in chess, and he appointed him tutor of his children. Among these children was a lovely girl of the name of Aphanasia, who fell in love with the romantic Hungarian, and with the consent of her father they were married. In 1771 he effected his escape from Kamtchatka with the assistance of his wife, who, although she had since learned that he had another wife in Hungary, continued to cling to him with the same affection, followed him to Formosa and to Moscow, at which latter place she died, loving him to the last. On his return to Paris, he undertook to found a French colony at Madagascar, where he arrived in June, 1774, founded his colony, and in 1775 was proclaimed king by some of the native tribes, while his wife, whom he had this time prudently taken with him, was proclaimed queen. The governor of the Isle of France refusing to supply him with men to support his state, Beniowsky applied directly to the French government, but without success. Disgusted with the French and their colonies, he now entered the Austrian service, and was commander in the battle of Habelschwerdt, in 1778, against the Prussians. His subsequent efforts to interest the English government for Madagascar were fruitless, but he was successful in obtaining the support of a wealthy firm of Baltimore, U. S., and leaving his wife in America, he effected a landing in that island, but soon after he arrived he was killed in a conflict with a body of troops from the Isle of France. He wrote his autobiography in French; it was translated into German by George Forster, into English by William Nicolson, and into various other languages. Kotzebue dramatized his character and career in his play entitled the "Conspiracy in Kamtchatka."

BENJAMIN (son of my good fortune), named by his mother, who died in childbirth, Benoni (son of my sorrow), the youngest and favorite son of Jacob. We find Jacob refusing at first to let Benjamin go down into Egypt with the other brethren, at the demand of the then unknown Joseph, during the famine. The tribe of Benjamin was weak and small in its early history, yet it seems to have been treated with special favor in the exodus of the Hebrews to Palestine, having the place of honor both in the encampment and order of march. On the division of the land, a territory rich and fertile, though small, was assigned to Benjamin. It was a sort of frontier land between the two great rival tribes of Ephraim and Judah, and it

seems to have vacillated, in its attachments, from one to the other. In its early history it attached itself to Ephraim, and is generally mentioned in connection with that tribe. It furnished the first king to Israel, in the person of Saul. Upon the death of Saul the tribe of Benjamin, naturally enough, claimed the succession in the person of Ishbosheth. Around him the 11 tribes rallied, while David, of the tribe of Judah, set up a claim to the throne. His most violent enemies, from the commencement of his campaign against the kingdom, Saul, Shimei, and Sheba, were Benjamites. Jerusalem, within the borders of Benjamin, was already in his possession, while Bethel and Jericho were in the hands of the northern factions. Under these circumstances Benjamin scarcely knew how to act. The death of Abner and Ishbosheth decided its course. Policy was on the side of a surrender, which was felt by all the rebellious tribes, and accordingly David was recrowned at Hebron, as the king of all Israel. From that time the fortunes of Benjamin no longer follow those of Ephraim on the north, but are cemented to the more princely estate of Judah on the south. To Judah Benjamin was more closely geographically related than to Ephraim. In the northernmost part of the Benjamite territory coursed across from east to west that great range of highlands, on which stood Ai, Michmash, and Bethhoron, overlooking on the one hand the vast southern slope of Jerusalem and the surrounding country of Judea, and on the other the more extensive but less fertile territory of Samaria and Galilee. On this tableland was the second great struggle of the Israelites for an entrance and possession of the promised land. Here was the conflict of Saul with the Philistines in the hour of the deepest depression the Jewish state ever saw until her subjugation to the Assyrian power. And from these high tablelands the crusader Cœur de Lion exclaimed, with his face buried in his armor, that he might not see the country that lay stretched out before him, and desecrated by the Moslem sway: "Ah, Lord God! I pray that I may never see thy holy city, if so be that I may not rescue it from the hands of thine enemies." The interests of Benjamin were, then, geographically involved in the triumph of the house of David when the immediate prospect of its own supremacy was taken away in the death of Ishbosheth. To its topographical destinies it was always after faithful, not even losing its affection for Judah in the revolt of the ten tribes under Jeroboam, nor yet in the captivity of Babylon, for after the return Judah and Benjamin were "the flower of the new Jewish colony in Palestine."

BENJAMIN, PARK, an American poet and journalist, born Aug. 14, 1809, at Demerara, in British Guiana, where his father, a New Englander of Welsh descent, resided as a merchant. An illness at an early age, improperly treated, caused him a permanent lameness, and he was sent to his father's home in New England for

medical advice and to be educated. He studied 2 years at Harvard college, graduated at Trinity college, Hartford, in 1829, began to practise law in Boston in 1832, and was one of the original editors of the "New England Magazine." In 1837 he removed to New York, edited in connection with O. F. Hoffman the "American Monthly Magazine," and subsequently was associated with Horace Greeley in editing the "New Yorker." He was next engaged, in connection with Epes Sargent and Rufus W. Griswold, as editor of the "New World," a cheap weekly periodical, which republished the best articles of English magazine literature, and received original contributions from many spirited writers. After 5 years he sold his interest in this journal, and has since appeared frequently before the public as a lecturer both in prose and verse. His poems, which embrace many popular lyrical and satirical pieces, have never been collected, but are found scattered through the recent periodical literature of the country.

BENJAMIN OF TUDELA, a Jewish rabbi, born at Tudela, in Navarre, died about 1178, noted in history as the first western traveller who penetrated very far into the regions of the East. He journeyed, as appears from his "Itinerary," as far as China, though most critics incline to the opinion that very many of his descriptions of places are derived from other sources than personal travel and observation. His account is full of fabulous stories and errors in fact. The spirit of critical examination and geographical research which has characterized eastern travel, and especially in the Holy Land, for 2 centuries past, was not then kindled. The important aid of correct geographical knowledge in scriptural expositions had not been recognized. The Bible was not studied as it is now. Moreover, Benjamin was a Jew; he travelled and wrote with Jewish prejudices. Indeed, the specific object of his journey was to acquaint himself with the state of his brethren in the East. No wonder, then, that he dilates with more enthusiasm on the prospects of the Jewish people when he stumbles upon a petty "prince of the captivity" exercising a limited authority at Bagdad over the Jews of the surrounding country, while he utterly neglects to describe some of the important scriptural places which he seems to have visited in Palestine, descriptions which, if faithfully made at that early day (1160), would have afforded valuable contributions to biblical literature. The "Itinerary," an account of his tour, was first written in Hebrew. It has since been published in German, Latin, French, and English. The first Hebrew edition was published in 1548, at Constantinople.

BENKAH, a fortified village of Bootan, N. India. It is built on a nearly inaccessible rock, 8,100 feet above the sea, has a citadel, and is defended by several round towers.

BENKEN, a small village of Switzerland, in the canton of Zurich, situated on the side of a hill clad with vines. It is noted for 2 battles

fought between the Austrians and Russians and the French in 1799. Pop. 625.

BENKENDORFF, **ALEXANDER**, count, a Russian diplomatist, born in 1782, in Esthonia, of a family of the inferior gentry, died at Baden-Baden, Sept. 28, 1842. His mother was first lady of the bed-chamber to the princess Mary of Württemberg, wife of the unhappy Paul I. of Russia. She followed her mistress to St. Petersburg, and married there. Her son thus obtained a position early in life at the court of Paul, whom he pleased by his quiet, insinuating manners and talent for drawing. He was placed in the guards, and advanced rapidly. After the death of Paul, he was transferred to the general staff, and participated in the wars against Napoleon in Germany and France. After the return of peace, he commanded a regiment of the guards, was again admitted into daily intimacy with the empress mother, the widow of Paul, and thus became intimate with Nicholas, then grand duke, who liked his apparent good-natured straightforwardness and high-sounding, virtuous phraseology. Nicholas, on becoming emperor, believed he had in Benkendorff the man to carry through reforms and eradicate all the internal abuses of the administration. Benkendorff was made a member of the military board appointed to investigate the conspiracy of 1825. He gained the fullest confidence and affection of his master, and became an all-powerful favorite. He introduced and enlarged the net of the *gendarmes* or military police over the whole empire, rendering it superior to all the military, civil, and ecclesiastical authorities. He was the chief of this peculiar army, numbering 44,000 men, as well as of the secret police or the secret spy system, of which the *gendarmes* formed the visible centres and channels of communication. Everybody trembled before a man who daily reported to his master so many secrets, mysteries, lies, and scandals. In the course of his career he was created a count. He was good-natured, but narrow-minded and feeble, mentally indolent, and himself a tool in the hands of his subordinates. The emperor Nicholas generally yielded to his advice, which, if not always clear and intelligent, was conciliatory as far as Benkendorff's mental powers could embrace the difficult questions affecting prominent individuals throughout the empire, in regard to whom he was called upon to enlighten his master. At one time even the highest matters of state and of foreign policy passed through his hands. His habits were dissolute, and he died discredibly.

BENNET, **HENRY**, earl of Arlington, an English statesman, born at Arlington, in Middlesex, England, in 1618, died July 28, 1685. He devoted himself to the cause of Charles I., and was appointed under-secretary of state; he fought in several battles, and was wounded at Andover. After the battle of Worcester he retired to Spain. Upon the restoration he returned to England, and was rewarded for his

services by being appointed keeper of the privy seal, and shortly afterward secretary of state. In 1664 he was created Baron Arlington; in 1670 became noted as one of the famous cabal, but is not accused of entertaining their extreme sentiments; he was created earl of Arlington in 1672. He was one of the plenipotentiaries sent to Utrecht to negotiate a peace between Austria and France. This mission not being successful, an endeavor was made by his colleagues to cast the odium of the failure upon Arlington; he, however, defended himself before the house of commons, and was acquitted. The war with Holland, which is said to have been caused by the machinations of the cabal, lost to Arlington the favor of the king and people; he, however, received the office of chamberlain. In 1679 he became a member of the new council, and retained his office of chamberlain on the accession of James II. During the many years in which he resided on the continent he had learned a cosmopolitan indifference to constitutions and religions; and while, if there was any form of government which he liked, it was that of France, and if there was any church for which he felt a preference, it was that of Rome, he yet observed the outward ordinances of Protestantism, and accommodated himself to the political views of the king and the public.

BENNET, THOMAS, an Anglican theologian and controversialist, writing equally against the Catholics and the various bodies of dissenters, born at Salisbury, May 7, 1678, died Oct. 9, 1728. He was extensively acquainted with the Greek, Latin, and oriental literatures, and composed verses in the Hebrew language. In 1700 he became rector of St. James's, Colchester, which position he held until 1714, when he became D.D., and removed to London, where he was chosen morning preacher at St. Lawrence Jewry, and lecturer at St. Olave's, in the Borough. He was soon after presented to the vicarage of St. Giles's, Cripplegate. Beside his works in confutation of popery, schism, Quakerism, and the principles of the nonjurors, he wrote many tracts on baptism, liturgies, and clerical rights, and engaged in the Trinitarian controversy in an examination of the "Scripture Doctrine of the Trinity" by Dr. Clark. Bennet was violent in his disputes, but honest and orthodox in his views.

BENNET, WILLIAM, an English composer, born about 1767, studied music at Exeter, under Bond and Jackson, and at London, under Bach and Schröter. By the last he was instructed in playing upon the piano-forte, which he was the first to introduce into Plymouth. In 1798 he was made organist to the church of St. Andrew's at Plymouth, and gained much reputation as an improvisator upon the organ. Of his numerous compositions the best are his collects of the church of England, new version of psalms, an anthem for the coronation of George IV., and an American glee.

BENNETT, JAMES GORDON, an American journalist, founder and proprietor of the "New York Herald," born about the year 1800, at New Mill, Keith, in Banffshire, Scotland. He remained at school in his native place till he was 14 or 15 years of age, when he went to a Roman Catholic seminary in Aberdeen, with a view to preparing for holy orders in that church, of which his parents were members. At this institution he pursued the usual routine of academic life for 2 or 3 years, when he abandoned the intention of entering upon an ecclesiastical career, and soon after determined to emigrate to this country. Acting under a sudden impulse, he embarked with a youthful companion, in April, 1819, and arriving in Halifax, with but scanty pecuniary resources, betook himself to the occupation of teaching for the sake of a livelihood. He was led to this employment by necessity rather than inclination, and after a brief experience of its annoyances, left Halifax for Portland, and soon made his way to Boston. This was in the autumn of 1819, and making the acquaintance of Mr. William Wells, an English gentleman, at the head of the distinguished publishing house of Wells and Lilly, he obtained the situation of a proof reader in that establishment. During his residence in Boston he was the author of several poetical compositions, suggested by his rambles in the vicinity of that metropolis. Little else is known of his history at this period. In 1822 he came for the first time to New York, and after a short connection with the press, accepted the offer of Mr. Willington, the proprietor of the "Charleston Courier" to employ him as a translator from the Spanish-American papers, for that journal. He also prepared original articles for the "Courier," some of which were in verse. He remained in this situation for several months, when he returned to New York, and issued proposals for the establishment of a commercial school. This plan was not carried into effect, and his next step was the delivery of a course of lectures on political economy, in the vestry of the old Dutch church in Ann street. In 1825 Mr. Bennett made his first attempt to become the proprietor of a public journal. He purchased a Sunday newspaper called the "New York Courier;" but not succeeding in the enterprise, was employed as a writer and reporter for several journals of the city. In 1826 he became closely connected with the "National Advocate," a democratic newspaper published by Mr. Snowden; and after the state election of that year, began to take an active part in politics. He was a vehement opposer of the tariff, and commented severely on the subject of banks and banking. In the spring of 1827 he discontinued his connection with the "National Advocate," which, having changed proprietors, had espoused the cause of John Quincy Adams, while Mr. Bennett was a warm partisan of Martin Van Buren, then in the senate of the United States. He was next engaged with the late M. M. Noah, as associate editor of the

"*Enquirer*," and became an acknowledged member of the Tammany society. During the presidential canvass of 1828, he was devoted to the interests of Gen. Jackson, residing at Washington as correspondent of the "*Enquirer*." After the fusion of that journal with the "*Courier*," in 1829, he continued to write in the editorial department of the "*Courier and Enquirer*;" and in the autumn of the same year, he became an associate editor. In 1831 he commenced a series of articles on the banking system of the United States, sustaining the opposition of Gen. Jackson and the democratic party, to the recharter of the United States bank. He remained in this position until 1832, when a difference of political opinion with the senior editor, Col. J. W. Webb, led to his retirement, and in Oct. of the same year he issued the first number of a new journal called the "*New York Globe*." This continued precisely one month, during which time it was strenuously devoted to the cause of Jackson and Van Buren. Mr. Bennett then purchased a part of the "*Pennsylvanian*," a daily journal in Philadelphia, and became its principal editor. He continued this publication until 1834, when he returned to New York, and in May, 1835, issued the first number of the "*New York Herald*," with which journal his name has since that time been identified. (See "*Memoirs of James Gordon Bennett, and his Times*," by a journalist, New York, 1855.)

BENNETT, WILLIAM STERNDALE, an English composer, born at Sheffield, England, April 18, 1816. At 8 years of age he was entered as a chorister in King's college, Cambridge, whence he was transferred to the royal academy of music, and became a pupil of Dr. Crotch, under whose tuition he composed a symphony in E flat, and several concertos, which were performed at the philharmonic concerts in London. He had completed several brilliant compositions, when attending the musical festival at Düsseldorf, he made the acquaintance of Mendelssohn, and formed an intimacy with him which had an important effect upon the career of the young composer, who thenceforth modelled his style upon that of his friend, at whose invitation he went to Leipzig, and brought out his overture of the "*Naiades*," and other works, at the Gewandhaus concerts. The favor with which these were received induced him to make Germany his home for several years. On his return to England in 1838, he was made a member of the royal society of music. He delivered at Queen's college, London, in 1843, a lecture on harmony, and has composed for his pupils a collection of pieces for practice on the piano-forte. His music so strongly reflects the peculiarities of Mendelssohn, that it cannot be called original, though full of grace and imagination.

BENNINGSSEN, LEVIN AUGUST THEOPHILE, count, a Russian general, born in Brunswick, Feb. 10, 1745, where his father served as colonel in the guards, died Oct. 8, 1826. As a

page, he spent 5 years at the Hanoverian court of George II.; entered the Hanoverian army, and having advanced to the rank of captain in the foot guards, participated in the last campaign of the 7 years' war. His excessive passion for the fair sex at that time made more noise than his warlike exploits. In order to marry the daughter of the baron of Steinberg, the Hanoverian minister at the court of Vienna, he left the army, retired to his Hanoverian estate of Banteln, by dint of lavish expenditure got hopelessly in debt, and, on the death of his wife, resolved to restore his fortune by entering the Russian military service. Made a lieutenant-colonel by Catharine II., he served first under Romanzoff, against the Turks, and then under Suwaroff, against the rebel Pugatcheff. During a furlough granted to him he went to Hanover to carry off Mlle. von Schwiebelt, a lady renowned for her beauty. On his return to Russia, the protection of Romanzoff and Potemkin procured for him the command of a regiment. Having distinguished himself at the siege of Otchakov, in 1788, he was appointed brigadier-general. In the Polish campaign of 1793-'94, he commanded a corps of light troops; was created general after the affairs of Orschani and Solli; decided the victory of Vilna, by breaking up, at the head of the horse, the centre of the Polish army, and, in consequence of some bold surprises, successfully executed on the banks of the lower Niemen, was rewarded by Catharine II. with the order of St. Vladimir, a sabre of honor, and 200 serfs. During his Polish campaign he exhibited the qualities of a good cavalry officer—fire, audacity, and quickness—but not the higher attainments indispensable for the chief of an army. After the Polish campaign, he was despatched to the army in Persia, where, by means of a bombardment, lasting 10 days, he compelled Derbend, on the Caspian sea, to surrender. The cross of the order of St. George of the second class, was the last gift he received from Catharine II., after whose death he was recalled and disgraced by her successor. Count Pahlen, military governor of St. Petersburg, was organizing at that time the conspiracy by which Paul lost his life. Pahlen, knowing the reckless character of Benningssen, let him into the secret, and gave him the post of honor—that of leading the conspirators in the emperor's bedchamber. It was Benningssen who dragged Paul from the chimney, where he had secreted himself; and when the other conspirators hesitated, on Paul's refusal to abdicate, Benningssen exclaimed, "Enough talk," untied his own sash, rushed on Paul, and after a struggle, in which he was aided by the others, succeeded in strangling the victim. To shorten the process, Benningssen struck him on the head with a heavy silver snuff box. Immediately on the accession of Alexander I., Benningssen received a military command in Lithuania. At the commencement of the campaign of 1806-'7, he commanded a corps in the first army under Kameuski—the second being com-

manded by Buxhövdén—he tried in vain to cover Warsaw against the French, was forced to retreat to Pultusk on the Narew, and there, Dec. 24, 1806, proved able to repulse an attack of Lannes and Bernadotte, his forces being greatly superior, since Napoleon, with his main force, had marched upon the second Russian army. Benningesen forwarded vain-glorious reports to the emperor Alexander, and, by dint of intrigues against Kamenski and Buxhövdén, soon gained the supreme command of the army destined to operate against Napoleon. At the end of January, 1807, he made an offensive movement against Napoleon's winter quarters, and escaped by mere chance the snare Napoleon had laid for him, and then fought the battle of Eylau. Eylau having fallen on the 7th, the main battle, which, in order to break Napoleon's violent pursuit, Benningesen was forced to accept, occurred on Feb. 8. The tenacity of the Russian troops, the arrival of the Prussians under Lestocq, and the slowness with which the single French corps appeared on the scene of action, made the victory doubtful. Both parties claimed it, and at any rate, the field of Eylau—as Napoleon himself said—was the bloodiest among all his battles. Benningesen had *Te Deums* sung, and received from the czar a Russian order, a pension of 12,000 rubles, and a letter of congratulation, praising him as “the vanquisher of the never vanquished captain.” In the spring, he intrenched himself at Heilsberg, and neglected to attack Napoleon, while part of the French army was still occupied with the siege of Dantzic; but, after the fall of Dantzic, and the junction of the French army, thought the time for attack had arrived. First delayed by Napoleon's vanguard, which mustered the third part only of his own numerical force, he was soon manoeuvred back by Napoleon into his intrenched camp. There Napoleon attacked him in vain June 10, with but two corps and some battalions of the guard, but on the next day induced him to abandon his camp and beat a retreat. Suddenly, however, and without waiting for a corps of 28,000 men, which had already reached Tilsit, he returned to the offensive, occupied Friedland, and there drew up his army, with the river Alle in his rear, and the bridge of Friedland as his only line of retreat. Instead of quickly advancing, before Napoleon was able to concentrate his troops, he allowed himself to be amused for 5 or 6 hours by Lannes and Mortier, until, toward 5 o'clock, Napoleon had his forces ready, and then commanded the attack. The Russians were thrown on the river, Friedland was taken, and the bridge destroyed by the Russians themselves, although their whole right wing stood still on the opposite side. Thus the battle of Friedland, June 14, costing the Russian army above 20,000 men, was lost. It was said that Benningesen was at that time influenced by his wife, a Polish woman. During this whole campaign Benningesen committed fault upon fault, his whole conduct exhibiting

a strange compound of rash imprudence and weak irresolution. During the campaign of 1812, his principal activity was displayed at the head-quarters of the emperor Alexander, where he intrigued against Barclay de Tolly, with a view to get his place. In the campaign of 1818, he commanded a Russian army of reserve, and was created count by Alexander, on the battle field of Leipsic. Receiving afterward the order to dislodge Davoust from Hamburg, he beleaguered it until Napoleon's abdication of April, 1814, put an end to hostilities. For the peaceful occupation of Hamburg, then effected by him, he claimed and received new honors and emoluments. After having held the command of the army of the south, in Bessarabia, from 1814 to 1818, he finally retired to his Hanoverian estate, where he died, having squandered most of his fortune, and leaving his children poor in the Russian service.

BENNINGTON, the name of a county and its shire town in Vermont, area about 700 sq. miles, pop. in 1850, 18,589. It lies in the S. W. corner of the state, and is skirted by the Green mountains on the east. It is well watered by the Battenkill, Hoosick, and smaller streams, has many water privileges, and although much of its land is too rough for cultivation, it is good for grazing, and is, on the whole, a thriving part of the state. In the north part of the county, especially in Dorset, large quantities of marble are quarried and manufactured, for building and ornamental purposes, some varieties of which are very white and fine, and take a high polish. The county is cut by 2 railroads, meeting at Rutland, Vt., on the north, and at Eagle Bridge, N. Y., on the south. The Rutland and Washington road crosses the north-western corner of the county only, while the western Vermont nearly bisects it, having stations in 6 towns. In 1850 the productions amounted to 150,920 bushels of Indian corn, 200,018 of potatoes, 54,600 tons of hay, 502,786 pounds of butter, and 558,494 of cheese. There were 8 cotton and 4 woollen factories, 8 grist mills, 2 paper mills, 2 powder mills, 40 saw mills, 4 founderies, 2 newspaper offices, 29 churches, and 6,177 pupils attending public schools.—The town is situated in the S. W. part of the county, was settled in 1761, has a considerable manufacturing interest, especially of stoneware, known as the Bennington ware, and is one of the shire towns of the county, Manchester being the other. Bennington is noted in history as the place in which one of the early battles of the revolution was fought. The army of Gen. Burgoyne, marching to the south from Canada in 1777, and causing the abandonment of Ticonderoga by Gen. St. Clair, created the greatest commotion throughout New England, since Boston was supposed to be its point of destination. Gen. Stark chanced to be at the time at Bennington, having under his command a corps of New Hampshire militia, and he determined to confront a strong detachment of

the enemy sent out under Col. Baum to procure supplies. He hastily collected the continental forces in the neighborhood, and Aug. 16 approached the British colonel, whom, after a hot action of 2 hours, he forced to a disorderly retreat. The engagement was hardly over when a reinforcement arrived, sent by Gen. Burgoyne, and the battle was renewed, and kept up several hours till dark, when the British forces retreated, leaving their baggage and ammunition. The loss of the enemy was 200 killed, 600 taken prisoners, and 1,000 stand of arms.—The Americans lost only 14 killed and 42 wounded. No trace now remains to indicate the precise locality of the engagement.

BENNO, SAINT, bishop of Meissen, born in 1010 at Hildesheim, died June 16, 1107. He was educated in the cloister of St. Michael in his native town, where in 1032 he assumed the cloak of a Benedictine monk. In 1051 he received the appointment of canon of the church in Goslar, and in 1066 was promoted by the emperor Henry IV. to the bishopric of Meissen. The efforts which he immediately began for the advancement of Christianity in the territories of his bishopric were frustrated by the war which broke out between the emperor and Pope Gregory VII. He declared himself for the pope against the cause of Henry, and though more than once made a prisoner by the imperial forces, was yet restored to freedom. But when in 1085 he supported in a general council the ban of excommunication which was thundered against the emperor, the latter exerted his power and took from him his bishopric. He was afterward restored to the same bishopric by Pope Clement III., and, in an unenlightened age and a most benighted territory, labored with zeal and discretion until his death for the welfare of his flock. In the 15th century pilgrimages were made to his tomb, and in 1523 he was canonized.

BENOÎT, RENE, a celebrated French doctor of the Sorbonne, curate of St. Eustace, in Paris, was born at Savenières, near Angers, in 1521, and died March 7, 1608. Being secretly inclined to Protestantism, he published at Paris the French translation of the Bible which had been made by the reformed ministers at Geneva, which, although it had been approved by several doctors of the Sorbonne, and its publication authorized by Charles IX., was condemned as soon as it appeared. Benoît was confessor to Mary, queen of Scots, during her stay in France, and for some time after her return. When Henry IV. abjured the reformed faith, he assisted at the ceremony. He was afterward made bishop of Troyes, but could never obtain the pope's authority for his installation, and was obliged to content himself with enjoying the episcopal revenues.

BENOOWE, "the mother of waters," a river of central Africa, the main tributary of the Quorra, Kawara, or Niger, which it rivals, if it does not surpass, in length, depth, and breadth. This river has hitherto been termed

the Chadda, Tchadda, or Tsadda, but Dr. Barth thinks this name was an invention of Lander, who, in common with other travellers, erroneously fancied it to be an outlet of Lake Tchad. It was first discovered by Richard and John Lander, Oct. 25, 1820. On Aug. 2, 1824, Richard Lander, Lieut. Allen, and Dr. Oldfield, entered the Benooowe, which they call the Chadda, in the ship *Alburkah*, intending to ascend it as far as its supposed source, Lake Tchad, but after proceeding 104 miles, and reaching a country called Domah, the king of which was at war with the sheik of Bornoo, they ran out of provisions and were obliged to return. The people would neither trade nor sell them any thing, but deserted the villages and retreated into the woods at their approach. On June 12, 1851, Dr. Barth, while travelling in Adamawa, came upon this river at its point of junction with a considerable affluent, the Faro, about long. 12° 30' E. It was there at least 800 feet broad, and was liable to rise, under ordinary circumstances, 30 or even 50 feet higher. The natives informed the traveller that it came from the S. S. E. Nothing further is as yet known of its source and upper course. The British government, impelled by the desire to open up to civilization and commerce the districts lying on the banks of this great natural highway into the centre of the continent, despatched (in conjunction with Mr. Macgregor Laird, a gentleman of wealth and knowledge) the steamer *Pleiad* to navigate this stream. Dr. Baikie eventually took command of the expedition, and has published an interesting narrative of his journey. See "Narrative of Exploring Voyage up the Niger and Tsadda, 1854" (Lond. 1856). The *Pleiad*, with an entire crew of black sailors and 8 black interpreters, commenced the exploration, July 8, 1854. The expedition reached a point 300 miles higher up the Benooowe than Allen and Oldfield, in 1824, and only 60 miles below the place of junction with the Faro. The want of wood for the purposes of fuel, and the fear of the crew that the river would fall and prevent them from regaining the coast, compelled a return. There was not a single death during this expedition. The inhabitants along the banks are partly pagans, and partly Mohammedans. The last are of the Fellatah nation, and speak the Palo and Housa tongues. The banks beyond Domah are thus described by Dr. Baikie: "Though no towns or villages could be seen to enliven the prospect, yet every thing around us wore a smiling aspect. The river, still upward of a mile in breadth, preserved its noble appearance; the neighboring soil teemed with a diversified vegetation, and the frequent recurrence of hill and dale pleased the eye. Nor was animal life wanting, for from our mast-head we enjoyed the novel sight of a large herd of elephants, crossing a little streamlet not much more than a mile from us." The further inland the *Pleiad* got, the more savage the population became. They discovered a tribe who lived in houses and villages flooded with water,

"like a colony of beavers, or after the fashion of the hippopotami and crocodiles of the neighboring swamps."

BENOWM, a town of Soodan, near the Senegambian frontier, in lat. 15° 5' N., long. 9° W. It is a caravan station on the road from the Senegal to Timbuctoo.

BENSLEY, THOMAS, a distinguished printer of London, died in 1838. He is much known for an edition of Lavater, printed by him in 1789, in 5 vols. 4to, and for an edition of the English Bible between 1800 and 1815, in 7 vols. 4to. He also printed Shakespeare in 1803, in 7 vols. 8vo, and Hume's England in 10 vols. folio, in 1806, which is adorned with elaborate portraits and engravings on copper. He was prominent also in the construction of the machine printing press, invented by Koenig, and applied to printing the "Times" newspaper in 1814.

BENSON, GEORGE, an English dissenting clergyman, born in Great Salkeld, in 1699; died in 1768. At 11 years of age he read the Greek Testament. From 1721 to 1763 he held successive pastoral charges; first at Abingdon, Berkshire, next at Southwark, and finally as colleague of Dr. Lardner in the congregation of Crutched Friars. He published several works, among which may be mentioned "A Treatise on Prayer" (1781), "Comments on some of the Epistles," "History of the first Planting of Christianity" (1735), "Reasonableness of the Christian Religion," "History of the Life of Christ," and "An Account of the Burning of Servetus, and of the concern of Calvin in it." In his early ministerial career he was Calvinistic in theology; later he became an Arian, and endeavored to suppress some of his former publications.

BENSON, JOSEPH, a Wesleyan Methodist minister, born Jan. 25, 1743, in the parish of Kirk-Oswald, in Cumberland, England, died Feb. 16, 1821. He acquired the rudiments of learning in the village school, and was subsequently placed under the care of the Rev. Mr. Dean, a minister of the Presbyterian church. He was a diligent student, and made rapid progress in the study of the Latin and Greek languages. His father designed educating him for a minister in the established church, but, while pursuing his studies, he was, through a relative, introduced to the Methodists, and, under the labors of that denomination, was converted. Soon after this event he joined that society, and ever afterward remained one of its most zealous and devoted members. After finishing the course of study at Mr. Dean's school, at the age of 17 he became a teacher in the Gamblesby school in Cumberland. Subsequently meeting with Mr. Wesley at Bristol, he was appointed by him to the office of classical teacher in the Kingswood school. His first attempts at preaching were among the colliers of Kingswood. Soon after he entered upon his duties as teacher at this place he entered his name in the books of the university of Oxford, and regularly kept his terms at St. Edmund's hall.

His object in this was to make himself more fully acquainted with classical literature, mathematics, metaphysics, and natural philosophy.—In the year 1767 the countess of Huntington founded a college at Invecca for the education of candidates for the Christian ministry, under the superintendence of Mr. Fletcher, through whose influence, and the sanction of Mr. Wesley, Mr. Benson was appointed the principal. After remaining some time in this institution, he went to Oxford, with the intention of preparing himself for orders in the church of England. In this, however, he was disappointed, for notwithstanding he had passed the curriculum of the university, his views and feelings were too strongly tintured with Methodism to allow his instructors to sign his testimonials, and though he obtained, through a clerical friend, a populous parish with a large church, and his testimonials were countersigned by the bishop of St. David's, yet the bishop in whose diocese the parish was situated refused to ordain him. He then returned to his Methodist friends at Bristol, and entered upon the work of preaching in different parts of Wiltshire. In due time he entered the itinerant connection, and was appointed to London circuit, and subsequently to Newcastle, Edinburgh, Bradford, Sheffield, Hull, Birmingham, Manchester, and other prominent places. After the death of Mr. Wesley he was appointed president of the conference, a position which he occupied for some time. While stationed in London, where he continued for 4 years, he commenced writing his commentary, and edited the "Wesleyan Magazine." Such was his popularity as a preacher, that vast crowds flocked to hear him. He was sent for in every direction to open new chapels and attend to the various interests of the denomination as president of the conference. In the 65th year of his age, he completed his commentary in 5 volumes quarto. This work has been very popular, both in England and America, among the Methodists, and still holds a prominent place in the literature of the church. He wrote, in the early part of his ministry, an "Essay on the Immortality of the Soul," and also one on the "Unscriptural nature of Socinianism." Toward the close of life he edited "Arndt's True Christianity," and continued up to the day of his death to conduct the magazine.

BENTHAM, JEREMY, an English juridical philosopher, born in London, Feb. 15, 1748, in Red Lion street, near Aldgate church, died in Queen-square place, Westminster, his residence for 40 years previously, June 6, 1832. His great-grandfather, a prosperous London pawnbroker of the time of Charles II.—a more reputable calling then than now—had acquired some landed property which remained in the family. His grandfather was a London attorney; his father, who followed the same profession, was a shrewd man of business, and added considerably to his patrimony, principally by fortunate purchases of land and

leases. These London Bentham's were probably an off-shoot from an ancient Yorkshire family of the same name, which boasted a bishop and many clergymen among its members; but the subject of this notice did not trouble himself much to trace his genealogy beyond the pawnbroker. His mother, Alicia Grove (whose beauty and amiability captivated his father at first sight, and prevailed over the temptation of a wealthier match which his family had in view for him), was the daughter of a retired Andover shopkeeper. Jeremy Bentham, the eldest, and for 9 years the only child of this marriage, was for the first 16 years of his life exceedingly puny, small, and feeble. At the same time he exhibited a remarkable precocity, which greatly stimulated the pride as well as affection of his father. At the age of 8 years, as he was not allowed story-books, he amused himself with reading Rapin's "History of England." He had a decided taste for music, and at 5 years of age acquired a knowledge of musical notes and learned to play the violin. At 4 or earlier, having previously learned to write, he was initiated into Latin grammar, and in his 7th year entered Westminster school. Meanwhile he was taught French by a private master at home, and at 7 read *Telemachus*—a book which strongly impressed him. Learning to dance was a much more serious undertaking; he was so weak in the legs as to make it laborious and painful. Young as he was, he acquired distinction at Westminster, as a fabricator of Latin and Greek verses, the great end and aim of the instruction given there. When 12 years old he was entered as a commoner at Queen's college, Oxford, where he spent the next 8 years. The young Bentham had not been happy at school. He had suffered from the tyranny of the elder boys, though he escaped the discipline of corporal punishment, and was but once forced into a boxing match. Neither was he happy at Oxford. Though regarded by others and taught from infancy to regard himself as a prodigy, he was yet exceedingly diffident, and to the highest degree sensitive of any slight or neglect—peculiarities which, as well as his high estimate of himself, clung to him through life. His tutor was morose, the college dull, while his sensitive pride suffered much from the mingled penuriousness and meddlesomeness of his father, who kept him on very short allowance; and who, in spite of all his affection for his son, of whose ultimate distinction he had formed the highest hopes, failed entirely to comprehend the boy's delicacy and diffidence, and never gained either his confidence or his love. His mother had died 2 years before he entered the university, leaving him an only brother, afterward Sir Samuel Bentham. Several years after his father married for a second wife the widow of a clergyman already the mother of 2 boys, of whom the eldest, Charles Abbot, was afterward speaker of the house of commons, and finally raised to the peerage as Lord Colchester. There were no children by this second marriage, yet it was a

source of great vexation to Bentham, to whom his mother-in-law was far from being agreeable. Though very uncomfortable at Oxford, Bentham went through the exercises of the college with credit and even with some distinction. Some Latin verses of his on the accession of George III. attracted considerable attention as the production of one so young. Into the disputations which formed a part of the college exercises he entered with much satisfaction; but he never felt at home in the university, of which he retained the most unfavorable recollection. In his old age, he seldom spoke either of Westminster school or Oxford but with asperity and disgust. In 1768, while not yet 16, he took his degree of A. B. Shortly after, he commenced eating his commons in Lincoln's Inn, but went back to Oxford to hear Blackstone's lectures. To these lectures he listened without the presumption, at that time, to set himself up as a critic, yet not without some occasional feelings of protest. Returning to London, he attended, as a student, the court of king's bench, then presided over by Lord Mansfield, of whom he continued for some years not only a great admirer, but a profound worshipper. Among the advocates, Dunning's clearness, directness, and precision, most impressed him. He took his degree of A. M. at the age of 18, the youngest graduate, so says Dr. Southwood Smith, that had been known at either of the universities; and in 1772 he was called to the bar. Bentham's grandfather had been a Jacobite; his father, educated in the same opinions, had, like others of that party, transferred his sentiments of loyalty to the reigning family. The young Bentham had breathed, from infancy, at home, at school, at college, and in the courts, an atmosphere conservative and submissive to authority. Yet, in the progress of his law studies, beginning to contrast the law as it was with law such as he conceived it might be, and ought to be, he came gradually to abandon the position of a submissive and admiring student, anxious only to make of the law a ladder by which to rise to wealth and eminence, for that of a sharp critic, an indignant denouncer, a would-be reformer. His father, who fondly hoped to see him lord chancellor, had some cases in nurse for him on his admission to the bar, and took every pains to push him forward. But it was all to no purpose. His temperament, no less than his moral and intellectual constitution, wholly disqualified him for success as a practising lawyer. He soon abandoned with disgust, to the infinite disappointment of his father, all attempts in that line. With a feeling in the highest degree distressing of having failed to fulfil the high expectations formed of him by his friends, and entertained by himself, he continued for years, to borrow his own words, "to pine in solitude and penury in his Lincoln's Inn garret," living on a very narrow income, drawn partly from some legacies, and partly from a small property conveyed

to him by his father at the time of his second marriage. Still, however, he continued a dilligent student and serious thinker, amusing himself with chemistry, then a new science, though mainly devoted to jurisprudence, but rather as it should be, than as it was. The writings of Hume and Helvetius had led him to adopt utility as the basis of morals, and especially of legislation; and already he began to write down his ideas on this subject—the commencement of a collection of materials for, and fragments of, a projected, but never completed code, which, for the whole remainder of his long life, furnished him with regular and almost daily employment. In the controversy between Great Britain and her American colonies, which became at this time a leading topic of public discussion, Bentham did not take any great interest. His tory education, and his idea of the law as it was, led him, unwarpd, as he says, by connection or hopes, to favor the government side. In the arguments on behalf of the colonies, used on either side of the water, he saw nothing to change his mind. "The whole of the case," to borrow his own statement, "was founded on the assumption of natural rights, claimed without the slightest evidence of their existence, and supported by vague and declamatory generalities." Had the argument been placed on the ground of the impossibility of good government at such a distance, and the benefits that would accrue to both parties from a separation—grounds more in accordance with his ideas of the true basis of laws—it would then have attracted his attention. As it was, he had some hand, though small, in a book, "Review of the Acts of the 13th Parliament," published in 1775, by a friend of his, one John Lind, in defence of Lord North's policy. The next year he ventured to print a book of his own, under the title—the first part of it so appropriate to the character of all his writings—of "A Fragment on Government." He had contemplated a critical commentary on the commentaries of Blackstone, then lately published; but in this piece, he confined himself to what Blackstone says of the origin of government. Rejecting the fiction of an original contract, suggested by Locke, and adopted by Blackstone, he found government sufficiently warranted and justified by its utility; while in place of conformity to the laws of God and nature, which appeared to him to rest too much in vague assertion and opinion, he suggested "the greatest happiness of the greatest number" as a precise and practicable test of right and wrong, both in morals and laws. This pamphlet, for it was scarcely more, appeared anonymously, and attracted at first some attention. It was even ascribed to Mansfield, to Camden, and to Dunning. The impatient pride of Bentham's father having led him to betray the secret of its authorship, the public curiosity, which had been aroused by the work, not in its character of a philosophical treatise, but of a personal attack, speedily subsided. A second pamphlet, publish-

ed in 1778, a criticism, though, on the whole, a friendly one, on some amendments to the law of prison discipline, prepared in the form of a printed bill, with a preface to it by Mr. Eden (afterward Lord Auckland), assisted by Blackstone, did not attract much more attention. He was also disappointed in an attempt which he made, at this time, to be appointed secretary of the commission sent out by Lord North to propose terms to the revolted American colonies—a place already, before his application was made, given to Adam Ferguson. Meanwhile his writings, though neglected at home, yet served to make him known at Paris, whence he received letters addressed to him in the character of a philosopher and reformer from D'Alambert, Morellet, Chastellux, Brissot, and others. They also gained for him the acquaintance and friendship of Lord Shelburne, who in 1781 paid him a visit in his Lincoln's Inn garret. After much urging, Shelburne at length prevailed upon him to become a visitor at his country seat of Bowood. The ice once broken, Bentham became a frequent inmate there, and a great favorite, especially with Lady Shelburne. He was indeed more noticed by the ladies, whose musical performances he accompanied on the violin, than by Camden, Barré, and other great men of the day whom he met there. Still this introduction to Bowood was a great thing for Bentham. It raised him, as he himself expressed it, from the "bottomless pit of humiliation" into which he was fast sinking, and inspired him with new confidence in himself and new zeal for his favorite studies. He had also the additional excitement of falling in love. A very young lady whom he met there, whose frank simplicity was in strong contrast with the stiffness and prudery which was the prevailing style at Bowood, made an impression on his heart, which, though it did not result in marriage, yet lasted through life. Already before his acquaintance with Lord Shelburne he had printed part of an introduction to a penal code which he had undertaken to construct; but the unfavorable or lukewarm opinion of his undertaking expressed by Camden and Dunning, to whom Shelburne had shown the sheets, and by some other friends whom he consulted, joined to his ill-success in finishing the work to his mind, long kept this printed fragment unpublished.—In 1785 he left England on a visit to his younger brother, then employed, with the rank of colonel in the Russian army, in the service of Prince Potemkin, in an abortive scheme, of which Krikov on the Don was the seat, for introducing English methods in manufactures and agriculture into that barbarous region. Furnished with funds by a maternal uncle, Bentham proceeded by way of Paris, his third visit thither, across the Alps to Leghorn. There he embarked in an English ship for Smyrna, and from Smyrna sailed in a Turkish vessel to Constantinople. After passing several weeks in that city, he travelled by land through Bulgaria, Wallachia, Moldavia, and the Uk-

rairie, to his destination in White Russia. Here he spent a year and a half, living most of the time a very solitary life, devoting himself amid many annoyances and privations, among which was want of books, to his favorite studies. Tired out at last, in the absence of his brother, detained at Kherson by an expected attack from the Turks, he started for home by way of Poland, Germany, and Holland, and reached England in the spring of 1788. While residing at Krikov he had written his "Letters on Usury," occasioned by the report that the legal rate of interest was to be lowered. He sent the manuscript to England; his father caused it to be printed while he still remained absent, and it proved with the English public the most successful of his works. Renewing his visits to Bowood, he there met Romilly, whom he had known slightly before, and with whom he now formed an intimacy which lasted as long as Romilly lived. He now also first formed the acquaintance of the Swiss Dumont, who had been domesticated at Lord Shelburne's during his absence. Bentham had become so much disgusted at his failure to attract attention in England that he had adopted the idea of publishing in French, and had made some essays in that language. Romilly had shown some of these French sketches to Dumont, who, very much impressed by them, offered his services to correct and re-write them with a view to publication. Another friend of Bentham's, with whom he had kept up a correspondence while absent in Russia, had written to him of Paley's success in applying the principle of utility to morals, and had urged him to set to work to complete some of his own treatises; or at least to publish the already printed part of his introduction to his unfinished penal code. These sheets, after lying in hand for 8 years, were now at length published under the title of "An Introduction to the Principles of Morals and Legislation," but they attracted very little attention. Dumont, however, who about this time went to Paris, and became connected with Mirabeau, aided to spread Bentham's reputation, and in the *Courrier de Provence*, of which he was one of the editors, gave publicity to some of his manuscripts. Meanwhile Bentham, with the idea of aiding the deliberations of the states-general, then about to meet, drew up and printed, but did not publish, his "Parliamentary Tactics," and with the same object in view prepared and printed a "Draft of a Code for the Organization of the Judicial Establishment in France;" services which the national assembly recognized, by conferring on him the citizenship of France, in a decree (Aug. 23, 1792), in which his name was included with those of Priestley, Paine, Wilberforce, Clarkson, Mackintosh, Anacharsis Oloota, Pestalozzi, Washington, Klopstock, Kosciuszko, and several others. In this character of French citizen, Bentham next year addressed to the national convention a new pamphlet, "Emancipate your Colonies," the first work which laid down the principle of

ranking colonies as integral parts of the mother country.—While residing at Krikov, Bentham's attention had been attracted by an architectural idea of his brother's, who was a person of great mechanical genius, though like himself given to running from one thing to another without stopping to finish any thing. This idea was that of a circular building so constructed as that from the centre all the inmates could be overlooked. The younger Bentham had attempted to realize it with a view to the oversight of his Russian workmen. The elder brother seized upon it, in connection with his study of penal legislation, as applicable to prison discipline. He gave to this building the name of Panopticon, and while still in Russia wrote a series of letters in explanation of its construction and its uses. These letters, after his return, were printed at Dublin by the Irish parliament, the adoption of his prison discipline scheme having been proposed there. In 1791 they were brought out at London, with additions, under the title of "Panopticon; or, the Inspection House."—In 1792 Bentham's father died, leaving him the family mansion in Queen's-square place, Westminster, where he chiefly resided for the rest of his life, and a freehold and leasehold property of between £500 and £600 a year. He left about an equal amount to the younger brother, who by this time had returned from Russia, and had zealously entered with his elder brother into the perfecting of the Panopticon, with a view to apply it to prison discipline. Being now possessed of means, Bentham, in conjunction with his brother, submitted plans to Mr. Pitt for taking charge of 1,000 convicts, in a building to be erected for that purpose, at the expense of the government; but—upon certain conditions, and at a certain rate of pay for each convict—to be under the entire control of the Benthams for their joint lives. Mr. Pitt, Mr. Dundas, Mr. Rose, and others, entered with much enthusiasm into the idea, and in 1794 an act of parliament authorized the contract. The Benthams obtained an advance from the treasury, and spent several thousand pounds of borrowed money on the strength of this arrangement, involving themselves thereby in great embarrassments, but from some mysterious cause, could not get any further advances, nor a signature of the contract. The ministers, however, continued favorable, and made use of a parliamentary committee, in 1797, to urge the completion of the contract, when at length the hitherto mysterious delay was explained, and the affair again brought to a standstill, by the refusal of the king to sign a treasury warrant for a sum of money needed to perfect the title to the land on which the building was to be erected, and for which considerable expenditures had already been made. George III. had taken an antipathy to Bentham, partly, as Bentham believed, from having looked into his treatise on the organization of the French judiciary, and partly because he had discovered him to be the author of 2 newspaper articles signed "Anti-Machi-

avel," and published in 1787, attacking the policy of a war with Russia, which the king had much at heart. Thirteen years more were spent in vain solicitations, till finally, in 1811, an act of parliament annulled the contract, and provided for the erection of a prison on a different plan, and at much greater expense to the public. In order to get a conveyance of the land, the imperfect title of which stood in Bentham's name, this act provided for an award on the question of damages, under which the Bentham's, 8 years after, received the sum of £28,000. It may well be supposed that Bentham's experience in this matter could not but embitter him against the existing management of public concerns.—Meanwhile, Dumont, having returned to England, had obtained from Bentham all his manuscripts, and had applied himself with zeal to the task of extracting from them, and his printed works, a vivid and popular statement, in French, of Bentham's system and ideas. This labor of love Dumont performed with remarkable success; and the first fruits of it, published at Paris in 1802, during the peace of Amiens, under the title of *Traité de législation civile et pénale*—a publication in which Talleyrand took a great interest, offering himself, if necessary, to bear the whole expense—speedily made Bentham known and famous throughout the continent of Europe as the philosopher of jurisprudence. In England, too, he acquired some new disciples and coöperators. Brougham joined Romilly in acknowledging his genius, and accepting many of his ideas. In 1808 he formed the acquaintance of James Mill, who, next to Dumont, did most to diffuse his doctrines. Mill lived for several years, a large part of the time, in Bentham's house, who still labored away some 6 or 8 hours daily on his codes, stopping, however, as occasion offered, to launch forth vehement attacks on the English system of jurisprudence. Such was his "Scotch Reform compared with English Non-Reform," published in 1808, and his "Elements of the Art of Packing as applied to Special Juries," printed in 1808, but which he was dissuaded by Romilly from publishing, lest it might expose him to a prosecution for libel. Some difficulty was even met with in finding a publisher for the "Rationale of Judicial Evidence," edited by Mill, from Bentham's manuscripts, lest that, too, especially the part of it assailing the whole technical method of English judicial procedure, might be regarded as a libel on the administration of justice. Nor, indeed, did this work appear till 1827, when it was published in 5 vols. 8vo. Confirmed, meanwhile, by his growing reputation, in his always strong interior faith in himself, Bentham became anxious to bring out, not as a mere draft, but as an actual body of law, his ideal code, on which he had been laboring all his life, but which yet existed only in his brain, and in an immense mass of fragmentary manuscripts. He had hoped, on the strength of promises from Miranda, to become the legislator of

Venezuela, to which country he had even thoughts of removing. But Miranda's project failed. In 1811—Dumont having in that year brought out a new French work, edited from his manuscripts, *Théorie des peines et des récompenses*—he addressed an elaborate letter to President Madison, offering, upon the receipt of a letter importing the president's approbation, and, as far as depended upon him, acceptance of his proposition, to forthwith set about drawing up for the use of the United States, or such of them as might accept it, "a complete body of law; in one word, a pannomion, or as much of it as the life and health of a man, whose age wanted little of four and sixty, might allow of," asking and expecting no reward beyond the employment and the honor of it. This letter, beside a sketch of his plan, which embraced not merely the text of a code, but a perpetual running commentary of reasons, included also a vigorous attack upon the existing system of English and American jurisprudence, and an answer to certain anticipated objections, both to the plan, and to himself as legislator. Mr. Brougham wrote at the same time to some American friends, expressing his opinion that no person in Europe was so capable as Bentham of such a task. No answer had been received to this letter when, in 1814, Mr. Gallatin was a little while in England, in his capacity of commissioner, to treat for peace. Not only had Gallatin received from Dumont, who was his countryman, a presentation copy of the *Traité de législation*, but he had, as he told Bentham, who had an interview with him, been his disciple for 25 years, in consequence of having read, soon after its publication, a copy of the "Introduction to the Principles of Morals and Legislation," put into his hands by Colonel Burr. We may mention, by the way, that Burr himself, when in England, 6 years before, had obtained an introduction to Bentham from Dumont, and had even passed a considerable time under his roof—one object of Bentham doubtless being to avail himself of Burr's knowledge of American affairs. In consequence of this interview with Gallatin, Bentham was led, in a letter to Governor Snyder, of Pennsylvania, enclosing a printed copy of his letter to Madison, and a letter of introduction from Gallatin, to renew his offer of himself, as a codifier. At length, in 1816, Madison returned a courteous reply to Bentham's letter of 1811, referring to the intervening war as an apology for his long silence, stating that a compliance with Bentham's proposals was "not within the scope of his proper functions," suggesting some obstacles to the proposed codification, and objections to it, but fully admitting the desirability of such a reform. This letter was conveyed to London by J. Q. Adams, appointed American minister to England, and who became, during his residence there, intimate with Bentham. When Adams returned home, in 1817, to assume the office of secretary of state, he became the bearer of a circular letter; addressed by Bentham to the

governors of the states, accompanied by copies of the letter to Madison, and a renewal of his offer of himself as legislator. Bentham's proposals, which he followed up by a series of short letters on the same subject, addressed to the people of the states, were laid before the legislatures of Pennsylvania and New Hampshire. He received appreciative letters from Governors Snyder and Plumer, of those states; but nothing further resulted. Several years later, Edward Livingston sent him a copy of his draft of a penal code for Louisiana, with strong expressions of admiration for his genius, and acknowledgments of the instruction received from the study of his works. Meanwhile, in 1814, Bentham had made an offer of his legislative aid to the emperor of Russia, in the language of which country 2 translations had appeared of the *Traité de législation*, one of them, it was said, by the special procurement of the government. The emperor replied in a letter written by his own hand, in which he promised to submit Bentham's proposal to the commission at work on a code for the empire. He sent, at the same time, a valuable ring, which Bentham returned, sending with it a second letter, in which he gave reasons why nothing could be expected to come of the reference of his proposals to a commission which, in one shape or another, had been in session for more than a century without any result. In the expectation that Prince Adam Czartorisky, who was one of his disciples, would be appointed regent of Poland, he had hopes of legislating for that country, but another person was appointed and this hope failed. The revolutions of 1820, which established liberal governments in the Spanish peninsula, gave Bentham new and stronger hopes. Dumont's compilations had been translated into Spanish, and were well known to the leading liberals of Spain and Spanish America. The Portuguese cortes caused them to be translated into Portuguese. In 1822 he published also his "Codification Proposal," addressed to all nations professing liberal opinions, tendering his services as legislator, and arguing in favor of a code emanating from a single mind. He was consulted on the Spanish penal code, on which, in 1822, he published some letters addressed to the conde de Toreno, and similar applications were made to him from Spanish America. But the downfall of liberalism in the peninsula, and the protracted civil wars in the late Spanish colonies, disappointed his expectations in that quarter.—While thus seeking the office of legislator, another idea had engrossed much of his attention. He had taken a great interest in the educational system of Bell and Lancaster, and in 1817 he had published, under the title of "Chrestomathia," a proposal to apply this system to the higher branches of education. There was even a scheme for erecting a building in his garden on the Panopticon system, in which the experiment was to be tried; but, like so many other of his plans, it did not go on.—Though Bent-

ham had always boasted of being a man of no party, as well as of all countries, he had come at length to occupy at home the position of a party chief. He espoused with characteristic zeal and enthusiasm the ideas of the radicals—who now first appeared as a political party. He went, indeed, the full length, not merely of republicanism, but on many points of democracy. He wrote pamphlets and drew up plans in behalf of parliamentary reform and other movements of the radicals, and became a sort of spiritual head of the party. It was he who furnished the money to set up the "Westminster Review," established in 1823 as the organ of the radicals. The political editor was Mr. Bowring (the present Sir John Bowring), with whom Bentham had formed an acquaintance through their mutual interest in the Spanish liberal movement. That acquaintance speedily ripened into a very close intimacy and friendship, which lasted to the end of Bentham's life. His connection with the radicals, and his vehement attacks on law abuses and the lawyers, had rather cooled off Lord Brougham, but in his place Bentham acquired a new disciple and pupil, in the person of Daniel O'Connell. Mr. Peel, in his movements in the house of commons for the amendment of the criminal law, seemed to be starting in Bentham's direction. Bentham even entertained the hope that he might persuade the duke of Wellington, with whom he corresponded, to undertake, in addition to Catholic emancipation, those reforms in the administration of justice which Cromwell had attempted, but in which the lawyers had baffled him. The acknowledgment of his genius by the most eminent men of his times, his world-wide reputation, and the share he was now taking in the actual movement of affairs, more than made up for the sneers, to which, indeed, he paid no attention, cast at him as a visionary schemer; and the satisfaction and even gayety of the latter part of his life formed a strong contrast with the gloom of his youth and early manhood. In his last 10 years he seldom left his own home, taking exercise in his garden. He retained to the last his love of music, of pet animals, cats particularly, and of flowers, but spent regularly 6 or more hours a day in composition, employing generally 2 secretaries. He saw no company, except at dinner. His hour of dining was 7; his table was delicately spread, but admission to it, though he generally had 2 or 3 guests, was only obtained as a particular favor. Dinner was followed by music on the organ. He was of a gay and lively temper, hopeful, enthusiastic, and, in spirit, young to the last. His last published work was his "Constitutional Code," of which a volume appeared in 1830. At the time of his death he was engaged with Bowring in an attempt to present his fundamental ideas in a more popular form. This work was published in 1834, after his death, under the title of "Deontology." Bentham gave a practical exemplification of his principles by bequeathing

his body to his friend, Dr. Southworth Smith, for the purpose of dissection. A collection of his works, in 11 vols. 8vo, published at Edinburgh, under the supervision of Bowring, his executor, was completed in 1843. It includes, at the end, a memoir made up principally of letters and of Bentham's reminiscences, as noted down by Bowring, very badly put together, but containing a great deal of interesting matter. Dumont, just before his own death, edited and published, at Brussels, in 1828, a complete collection of his compilations from Bentham in 6 double volumes, demi-octavo. A translation into English of the *Traité de législation* was published at Boston in 1840, under the title of "Theory of Legislation." It is from this work, a translation of which, with some additions from Bentham's manuscripts, is included in Bowring's edition of Bentham's works, that the general reader will best obtain a knowledge of Bentham's system. In his earlier writings, and in many of his pamphlets, Bentham expresses himself with great terseness and energy, but in his didactic works he often loses himself in parentheses, and protracts his sentences to a tedious length. In his later writings he sacrificed every thing to precision, for which purpose he employed many new words, some of which, such as international, codify, codification, maximize, minimize, &c., have become permanent additions to the language. His analysis of human nature, on which he based his system, can hardly rank him high as a metaphysician; his employment of the exhaustive method of reasoning frequently led him into useless subdivisions and unnecessary refinements; but he had a very acute intellect, a thorough devotion to truth, a strong spirit of benevolence, unwarped by any selfish or party views. Unawed by authority, he appealed to reason alone, and, having devoted his whole life to the study of jurisprudence, his works abound with suggestions and ideas as novel as they are just. Nobody has been so much plundered as Bentham, said some one to Talleyrand. "True," he replied; "yet how rich he still is." In the improvements introduced of late years into the administration of the law, both in England and America, many of his suggestions have been followed, often without acknowledgment, or even knowledge, perhaps, of the source whence they originated. There are many more of his ideas that may yet be put to use. The 4th part of his treatise on the penal code, as published by Dumont, of which the subject is the indirect means of preventing offences, contains a mine of wisdom, which the numerous members of our legislative bodies might explore with advantage.

BENTHAM, THOMAS, an English Protestant clergyman, born in Sherburn, Yorkshire, in 1518, died in 1578. He was noted for the boldness with which he asserted his religious principles during the reign of Queen Mary, and was distinguished by the favor of Elizabeth in the settlement. Appointed fellow of Magdalen college, Oxford, he

freely expressed his religious sentiments, and was sometimes rather forgetful of the proprieties and courtesies of life, in the resolution to maintain his opinions. On one occasion, in 1558, he knocked the censor out of the hands of the officiating priest at mass, "in order to prevent incense being offered to idols." For this breach of decorum he lost his place, although the laws concerning religion were still in force. He then travelled on the continent, visiting successively Zurich, Frankfort, and Basel, at which latter place he employed himself in expounding the Scriptures to the English exiles who had taken refuge in that city. On his return to England, before the close of Mary's reign, he ministered privately to a Protestant congregation in London. Here he also nearly involved himself in personal difficulty, by the boldness with which he advanced his Protestant opinions. At the burning of some Smithfield martyrs, Mary had forbidden that any one should speak to them, or pray for them, on pain of similar punishment. Bentham, so soon as he got sight of them, deserted by his self-control, or else deliberately, cried out, "May God have mercy on them," with sundry other ejaculations, which called out a hearty round of "Amen" from the promiscuous multitude. On the accession of Elizabeth, Bentham was appointed to the pulpit of Paul's Cross—then a very influential station—and soon after, in 1559, to the see of Lichfield and Coventry. He was opposed to preserving in the Protestant church the forms and habits of Rome, but yielded to the policy of Elizabeth in the matter. He published an exposition of the Acts of the Apostles, and translated into English some parts of the Old Testament.

BENTINOK, the name of a distinguished noble family, of German origin, in England, with extensive connections in Germany and Holland. The English line was founded by JOHANN WILHELM, born in 1648, died in England in 1709; educated with William of Orange, whom he accompanied to England, and who made him earl of Portland. He was prominent in the battle of the Boyne, and in the peace of Ryswick. William III. died in his arms.—HENRY, his son, was made duke of Portland in 1716, and died in 1736, as governor of Jamaica.—WILLIAM, son of Henry, born 1708, died 1762; married Margaret Cavendish, a name which has since remained in the family.—Lord WILLIAM CHARLES CAVENTISH, second son of the 8d duke of Portland, born Sept. 14, 1774, died at Paris, June 17, 1839. Entering the army at an early age, he served in Flanders, with the duke of York; was colonel in the army before he was 21. In 1799 he joined the Russian army under Suwaroff, in Italy, where he continued in active service until 1801; went out to India, as governor of Madras, in 1808; was made major-general on his return in 1805; was sent on a mission to the Spanish court in 1808, relative to the French invasion of Spain; commanded a brigade, under Sir John Moore, at Corunna, in

Jan. 1809; went to Sicily in 1810, as plenipotentiary and commander-in-chief of the English troops there; bestowed a constitution on that island in 1819; conducted the expedition from Sicily to Catalonia, in 1818, to operate in the rear of the French armies, but was compelled to make a hasty retreat; took possession of Genoa, in 1814, when the inhabitants revolted from the French, and threw up his commission in disgust when the Genoese (who claimed the reestablishment of their republic under England, under the convention which had been made) were given over to Piedmont. By this time he was lieutenant-general. Returning to England, he was elected member of parliament for Nottingham, and voted with the liberal party. He subsequently was raised to the rank of full general, and was, in 1827, under the government of Mr. Canning (a family connection by marriage), sent to India as governor-general, in which capacity he continued until 1835, when ill health compelled him to resign. The results of his Indian rule were: the reduction of the batta (allowances made to the troops on the march), much to the discontent of the army; the abolition of flogging among the native troops, British soldiers serving in the same country remaining subject to it; the prohibition of the suttee, or burning alive of the widow on the funeral pile of her husband; the granting Englishmen leave to settle in India, though not belonging to the military or civil service; the upholding of the native population as far as possible; and the protection of the liberty of the press. Some of these alterations were made by order of the East India directors in England, and some were carried out contrary to the wish of the directors. In 1834 he made war on the rajah of Coorg, annexed his territory, and pensioned him off. When he quitted India, the natives, who looked upon him as the best friend they had had since the time of Warren Hastings, expressed their regret, at a public meeting in Calcutta, and testified their respect by erecting an equestrian statue of him. The court of directors in England, respecting his integrity and firmness, though they had sometimes differed in opinion with him, gave him a warm reception on his return. He reentered the house of commons in 1836, for the city of Glasgow, but was too much of an invalid to take an active part in politics or legislation, and resigned his seat a few days before his death, in his 65th year.—**LORD WILLIAM GEORGE FREDERIC CAVENDISH**, an English politician, born Feb. 27, 1802, died Sept. 21, 1848, 8d son of William Henry Cavendish, 4th duke of Portland (by Henrietta, daughter and co-heiress of Major-general Scott); he received the baptismal names of William George Frederic, but was commonly known only by the second. Though a younger son, he inherited a large fortune from his mother. He entered the army and rose to the rank of major. Mr. Canning, who had married his aunt, took him as private secretary, when he was foreign minister, and, pleased with his

frank nature, capacity for business, and trustworthy character, admitted him into his fullest confidence. In 1837, when Mr. Canning became prime minister, Lord George Bentinck entered parliament for the borough of King's Lynn, for which he continued to sit during the rest of his life. He was constant in attending the house, but spoke rarely and then not effectively. Nature had not made him an orator. Mr. Canning died in August, 1837, after a premiership of four months, and Lord Goderich (created earl of Ripon in 1838) succeeded Canning, and received the parliamentary support of Lord George—probably because the duke of Portland, his father, was in the cabinet. When the duke of Wellington brought in the Catholic relief bill of 1829, Lord George voted for it, and subsequently supported Lord Grey's ministry, during the reform bill debates, and until the succession of Lord Ripon, Sir James Graham, and Lord Stanley (now earl of Derby), in 1834. Similarity of tastes—both being fond of horses and racing—drew him so strongly to Lord Stanley, that, in Dec. 1834, when O'Connell quoted the lines from the "Anti Jacobin":

So down thy steep, romantic Ashbourne, glides
The Derby dilly, carrying six inside,

Lord George was one of the half dozen. He warmly supported Sir Robert Peel, during his short tenure of office, 1834-'5; strongly denounced what he called "the Lichfield house compact" (between O'Connell's Irish party and the whigs), by which Peel was compelled to resign office; warmly supported him in opposition until 1841, and declined an offer of office made to him at that time, on Peel's again becoming prime minister. For some time after, Lord George voted with Sir Robert; but, in 1843, when free trade principles began to pervade ministerial measures, many of the Peel party, who, as landed proprietors, considered protection indispensable for the maintenance of agriculture, became alienated from their chief. In 1846, when Sir Robert announced his intention of repealing the corn laws, many adherents quitted him. The protection party were about 240. They had no leader. Lord Stanley, who certainly would have been their head, had he remained in the house of commons, had been called up to the house of lords, in the course of the previous year. A man of weight, standing, experience, character, industry, vigilance, skill, eloquence, and tact, was required. No one thought of Lord George. The assault, on the opening of the contest on free trade in corn, was commenced by Mr. Disraeli. So long had Lord George been a silent member of the house, that no one—not even himself—anticipated that he could summon up confidence to be an active debater. An amendment on one of the government resolutions had been moved by Mr. Miles, and a long debate ensued. On the 12th night, when a division was eagerly looked for, Lord George Bentinck threw himself into the strife. It was long after midnight when he spoke but

his mind was filled with as thorough a knowledge of the subject as any one possessed; he was master of all the facts; he remembered all the figures; he possessed strong natural powers of rapid calculation; and, dismissing his timidity, he entered into the discussion, showing an intimate knowledge of the details and working of the British commercial system, evading no point, shrinking from no investigation. From that hour he was leader of the protectionists, with Mr. Disraeli as his assistant, and, though the contest was unsuccessful, his reputation was deservedly great. He never rose to eloquence, but earnestness, boldness, and plain language, combined to make him impressive and formidable. The public, who had previously known him only as a liberal patron of the turf—accepted, indeed, as a ruling authority on the race-course, and very anxious to substitute fair play and honorable principle for chicanery and trickery—exaggerated his efficiency. Thenceforth, until his death, Lord George was the first man, on the opposition side, in the commons. He studied the leading questions closely, and generally threw light upon every discussion. The session of 1848 had ended, and he went to his father's seat (Welbeck abbey, Nottinghamshire) to recruit. He had returned from Doncaster races, where one of his horses had won the great St. Leger stakes, and left the abbey to walk across the fields, to pay a visit to Lord Manvers, one of his neighbors. A mile from the house he had an attack of spasms of the heart, which was immediately fatal. He was found dead on a footpath through a meadow. The news of his decease, so sudden and so sad, smote the public mind with awe and grief. The funeral was most private, but as Mr. Disraeli, his biographer, records, "from 9 till 11 o'clock that day all the British shipping in the docks and the river, from London bridge to Gravesend, hoisted their flags half-mast high, and minute guns were fired from appointed stations along the Thames. The same mournful ceremony was observed in all the ports of England and Ireland; and not only in these, for the flag was half-mast high on every British ship at Antwerp, at Rotterdam, at Havre." Lord George Bentinck was singularly temperate and abstinent. He was unmarried. The continental branches of the Bentinck family bear the name of Bentinck-Rhoon, and Aldenburg-Bentinck.

BENTIVOGLIO, the name of a family once sovereign at Bologna, of which several members have been distinguished in Italian history. I. CERNELLO, a cardinal, born at Ferrara in 1668, died at Rome, Dec. 30, 1732. Under Clement XI., he became archbishop of Oathage, and nuncio in France, where he showed great zeal in behalf of the bull *Unigenitus*. He was recalled to Italy in 1719, and elected cardinal, after which he was sent as nuncio to Spain. He was a patron of literature, and was himself learned in law and the sciences, as well as in theology. There remain from him several dis-

courses, a translation of the *Thebais* of Statius, and some sonnets. II. ERCOLE, a poet, born 1512, died Nov. 6, 1578. He was scarcely 6 years old when his father, Annibale II., the last Bolognese sovereign who strove to maintain Bologna against the popes, was expelled, and betook himself to Ferrara, where his relatives, the princes of Este, offered a home, and subsequently diplomatic employment, to Ercole, who was a most accomplished person, excelling in poetry, music, and gymnastic exercises. He wrote sonnets, eclogues, satires, and comedies. III. GUIDO, born at Ferrara in 1579, died Sept. 7, 1644. He was raised in 1621 to the dignity of cardinal. As papal nuncio in Paris, he discharged his duties so successfully, that Louis XIII., on his return to Rome, appointed him protector of the interests of France at the Vatican. After having served three popes with so much distinction, it was supposed that he would himself ascend the papal throne, but he died almost immediately after the opening of the conclave.

BENTLEY, GIDEON, an American soldier, remarkable for his longevity, and for the excellent though humble services which he rendered to his country as soldier in the revolutionary war, was born in 1751, and died at Constantia, Oswego co., N. Y., in Jan. 1858, aged 107 years.

BENTLEY, RICHARD, classical scholar and critic, born at Oulton, near Wakefield, England, Jan. 27, 1662, died July 14, 1742. The son of a yeoman or small farmer, he was educated at Wakefield grammar school, whence, at the age of 13, he was transferred as a sizar to St. John's college, Cambridge. He took his degree of B. A. with distinction, his place in the arrangement of honors corresponding with that of third wrangler in the present system. From a fellowship in his own college, the most obvious resource of a young scholar, he was excluded by a by-law which was not rescinded until the reign of George IV. In 1682 he was appointed by his college to the head mastership of Spalding grammar school, and, after holding it for a year, quitted it for the more eligible situation of domestic tutor to the son of Dr. Stillingfleet, then dean of St. Paul's, where he had full use of the dean's fine library, one of the best collections in England, and constant association with the dean. Here Bentley acquired that Biblical learning which afterward entitled him to the divinity professorship, and which warranted his proposals for a revised text of the New Testament. He remained with Stillingfleet for 6 years, and then, early in 1689, accompanied his pupil to Oxford, where he himself was admitted, *ad eundem*, to the degree of M. A. he had previously taken at Cambridge. He made constant use of the Bodleian library, largely increased his knowledge of the oriental languages, became acquainted with the leading men of the university (through introductions from Stillingfleet, now bishop of Worcester), and more particularly with Dr. John Mill, the

editor of the Greek Testament. Bentley's first publication, in 1691, was a Latin epistle to Mill, on an edition of the "Chronicle" of John Malala, and his reputation as a scholar and a critic was at once established by it, in foreign countries as well as at home. At this time, he projected an entire edition of the "Fragments of the Greek Poets," and also a *Corpus* of the Greek lexicographers, neither of which he accomplished. He took holy orders in 1690. The celebrated Robert Boyle, who died at the close of the year 1691, bequeathed an annual stipend for the foundation of a lecture in defence of religion against infidels. Bentley obtained the first nomination early in 1692, and the lectures which he delivered established his reputation as a preacher. In October of the same year he was appointed a prebendary at Worcester; in April, 1694, keeper of all the king's libraries, and again selected as Boyle lecturer; in 1695 he was made one of the chaplains in ordinary to King William III.; and in 1696 took the degree of D. D. at Cambridge, and assisted his friend Gravins in preparing an edition of Callimachus. The Hon. Charles Boyle (afterward earl of Ossory) published a new edition of the "Epistles of Phalaris," early in 1695, and complained in his preface of some alleged want of courtesy on the part of Bentley, respecting the loan of a manuscript in the king's library. Bentley courteously assured Boyle that his statement was erroneous, and expected the complaint or accusation to be cancelled or retracted. Neither course was adopted, and, after a lapse of two years, Bentley was called on, in compliance with a promise made to his learned friend, William Wotton, the linguist, of Oxford—made long before Mr. Boyle had even commenced his labors—to make a public statement of the grounds on which he concluded the "Epistles of Phalaris" to be spurious. This appeared in an appendix to the second edition of Wotton's "Reflections on Ancient and Modern Learning," nor, as he had entered into the discussion, did he spare keen critical censure on Mr. Boyle's own labors. The leading scholars of Oxford, headed by Atterbury, united in a reply to Bentley, which was published in 1698, with the name of Charles Boyle on the title-page. Pope, Swift, and Gay brought lighter weapons into the field. General opinion set in strongly against Bentley, who was disliked for the arrogance of his knowledge; but, after a pause, there was issued that immortal dissertation (*immortalis dissertatio* are the words of Porson), in which Bentley disposed of the question at once and forever, with a mighty array of erudition, and showed that the "Epistles" were written by a sophist, who had assumed the name of Phalaris; that the epistles ascribed to Themistocles, Socrates, Euripides, and others, were not genuine; and that the fables attributed to Æsop were the productions of various minds, at various times. To this dissertation a rejoinder was promised, but never appeared. Early in 1700, at the age

of 38, Dr. Bentley received that main preferment which was at once his reward and his scourge for the rest of his life. By the gift of the crown, he was made master of Trinity college, Cambridge, an office of large emolument, great dignity, much power, and vast responsibility. In January, 1701, he married Joanna, daughter of Sir John Bernard, a baronet in Huntingdonshire. In the same year he was made archdeacon of Ely. As actual head of the university of Cambridge, he introduced many necessary reforms, put the university press on a better footing than before, encouraged scholars and scholarship, improved the discipline of his college, also improved the modes of examination for scholarships and fellowships, and extended the college library. Many abuses which he reformed were supported by the fellows of his college, from whose society he kept aloof, and his general conduct, even when morally and legally correct, was arbitrary. In 1709, the vice-master of Trinity and some of the senior fellows accused him of mal-appropriation of the college funds. Out of this arose a litigation (one of the *causes célèbres* of literature), in which Bentley, supported somewhat by the junior fellows, but most strongly by his own determination, boldness, and adroitness, succeeded in keeping his office 4 years after sentence of deprivation had been pronounced against him, and finally, at the end of nearly 80 years, saw the suit come to a natural death. In 1717, the regius professorship of divinity at Cambridge, by far the richest in Europe, became vacant. Bentley—notwithstanding the doubt whether, as master of Trinity, he could also hold that office—procured himself to be elected. His opening lecture treated of the text—1 John v. 7—on the three heavenly witnesses. He maintained the doctrine of the Trinity, but decidedly rejected the verse, of which he gave the history. As professor of divinity, one of his earliest administrative steps was, when George I. visited Cambridge, and several persons were nominated to the degree of D. D., to demand 4 guineas, in addition to the usual fees, before he would "create" them, as professor. For this, he was complained of to the vice-chancellor, and the result was, by a grace of the senate, passed by a majority of more than two to one, he was degraded and deprived of all his degrees, in Oct. 1718. He appealed to the law, and after more than 5 years' litigation, the court of king's bench issued a mandamus, compelling the university to reinstate him in every dignity, privilege, and right of which it had deprived him.—Amid all the litigious and troublesome years of Bentley's disputes with his college and with the university, he pursued his literary and scholastic labors as eagerly and perseveringly as if nothing else was on his mind. After his *coup d'essai* in literature (the appendix to the Chronicle of Malelas), he began to prepare editions of Philostratus, of Hesychius, and of the Latin poet, Manilius; but the Philostratus, though ready for the press, never

appeared, nor is it known what has become of it. In 1695 he assisted Evelyn in the revision of his *Numismata*. In 1696 he wrote the notes and made the emendations of the text of Callimachus. The first dissertation of Phalaris appeared in 1697, the second in 1699. He wrote in 1708 three critical epistles on the "Plutus" and the "Clouds" of Aristophanes, to assist his friend, Ludolf Kuster, in his edition of that poet. At various times he gave literary assistance to other learned men, and was mainly instrumental in engaging Professor Cotes to prepare a new and improved edition of Sir Isaac Newton's *Principia*. In 1710 he prepared emendations on 828 passages in the Fragments of Menander and Philemon, which had been edited, but with great ignorance of Greek, by the well-known Clericus, or Le Clerc. In 1711 he completed his edition of Horace—the most popular of all his publications. In 1718 he replied to Anthony Collins's "Discourse on Free Thinking." In 1716 he proposed, in a letter to Archbishop Wake, to restore the original text of the New Testament, exactly as it was at the time of the council of Nice—using the Vulgate to correct the Greek text, and out of all the variations obtain that which St. Jerome had authenticated as the reading authorized long before his day. The project was never proceeded with, though Bentley made extensive preparations for it, and even issued a prospectus (in 1720), to which was appended, as a specimen, the 22d chapter of the Revelations. In 1726 he published annotated and revised editions of Terence and Phædrus: it is said that "undoubtedly his Horace is by much the more elaborately learned; but with relation to the interests of his author, his Terence is the most complete." He subsequently became involved with Dr. Hare in a controversy on the metres of Terence, which made Sir Isaac Newton remark that "two dignified clergymen, instead of minding their duty, had been fighting about a play-book." Toward the close of 1731 he undertook his edition of "Paradise Lost," rapidly carried it on, and published it, with notes and corrections of the text, in January, 1732. His mistake was in undertaking such a work. It has some marks of ability; but, as a whole, is not worthy of his pen. In the same year, however, he redeemed himself. In 1726 he had noted and corrected the whole of Homer, chiefly with a view to the restoration of the digamma to its place and functions in the metre. In 1732 he seriously applied himself to complete this edition. It was never published, but the MS. was finally transmitted to Göttingen by Trinity college, for the use of Heyne, who, in his own edition of Homer, acknowledged the profoundest obligations to it, and made the world circumstantially acquainted with its merits. Bentley's edition of Manilius, published in 1739, when he was in his 78th year, had been prepared for the press 45 years before. Fourteen years after Bentley's death, Horace Walpole published, at his private press an edition

of Lucan, illustrated by the notes of Bentley, combined with those of Grotius. The suggestions of plausible conjectures for the emendation of the text are excellent. In 1740, after a happy union of 39 years, Bentley lost his wife. One of their daughters was the mother of Richard Cumberland, the dramatist. He had a presentiment, strong in his mind, that he would complete his 80th year, and exceeded that age by nearly 6 months, at his death in 1742.—As a public man, Bentley had an overweening opinion of his own dignity and rights, and a determination in upholding both, which opposition only increased. In private, though his manner was stately, if not severe, he is represented as being very amiable. It is scarcely too much to say that he was the best scholar England ever produced—the greatest of modern times, perhaps, if we except Salmasius. Parr, Porson, and others, unite in eulogizing his vast erudition. Dr. Johnson said that "he thought very highly of Bentley; that no man went so far in the kinds of learning that he cultivated." His life, by Dr. J. H. Monk, bishop of Gloucester and Bristol, is an elaborate production, leaning rather against Bentley, and published in 1880.

BENTLEY, WILLIAM, an American scholar and clergyman, born in Boston, in 1738, graduated at Harvard college in 1777, ordained pastor of a church in Salem in 1788, died Dec. 29, 1819. He was distinguished for his antiquarian learning, and collected a valuable and curious library and cabinet, which he bequeathed to the college at Meadville, Pa., and to the antiquarian society at Worcester. In theology he was regarded as a Unitarian, and he left several published sermons and discourses. He was for many years an editor of the "Essex Register," a democratic newspaper, wrote a history of Salem for the collections of the Massachusetts historical society, and after his death his eulogy was pronounced by Edward Everett.

BENTON, the name of counties in several of the United States. I. An eastern county of Alabama, bordering on Georgia, and embracing an area of 1,170 sq. m. The Coosa and the Tallapoosa are the chief rivers, beside which there are several small streams furnishing good water power. Chalybeate and other mineral springs are found in many places. Marble and limestone of good quality are obtained in abundance, and the ores, among which are gold, lead, and iron, are rich and plentiful. The surface is uneven, and in some places mountainous. Agriculture is in a very forward state, and, in 1850, the county produced 5,995 bales of cotton, 580,856 bushels of corn, 92,860 of sweet potatoes, and 69,452 of oats. There were 9 grist and flour mills, 7 saw-mills, 1 carding and fulling mill, 1 iron furnace, 1 newspaper establishment, and 25 churches. The public schools numbered 1,688 pupils. Value of live stock, \$388,410. Pop. 17,163, of whom 3,763 were slaves. Capital, Jacksonville. II. A north-western county of Arkansas, containing about 900 square miles. It is drained by Illinois

river and Flag creek, is generally level, and has a remarkably fertile soil. In 1854 the productions amounted to 248,780 bushels of corn, 81,812 of wheat, and 54,725 of oats. The strong tide of emigration which has been directed toward this part of the state, is rapidly augmenting the population and developing the resources of the country. Pop. in 1854, 5,495, of whom 195 were slaves. Capital, Bentonville. III. The old name of Hernando, a western county of the peninsula of Florida, bordering on the gulf of Mexico, and embracing an area of about 1,000 sq. m. It is a low, sandy tract, occupied in great part by swamps and pine forests. In 1850 it produced 28,515 bushels of corn, 86 hogsheads of sugar, 3,910 gallons of molasses, and 5,150 pounds of rice. There were 7 churches, and 60 pupils in the public schools. Value of live stock, \$65,840. Pop. 926; of whom 822 were slaves. Capital, Melendez. IV. A N. W. county of Tennessee, with an area of about 400 sq. m. It is bounded on the E. by the Tennessee river, and on the N. W. by the Big Sandy. The soil is good, and the agricultural products, in 1850, amounted to 305,490 bushels of Indian corn, 144,508 pounds of tobacco, and 48,802 of butter; value of live stock, \$151,611. There were 37 churches and 600 pupils in the public schools. Pop. 6,805, of whom 863 were slaves. Capital, Camden. V. A western county of Indiana, bordering on Illinois, watered by Pine and Sugar creeks, and having an area of 414 sq. m., most of which is occupied by fertile prairies. The surface presents few irregularities, and about $\frac{1}{2}$ of it is covered with forests of oak, ash, sugar-maple, and walnut. The chief staples are wheat, maize, oats, pork, and cattle. The value of live stock, in 1850, was \$65,110, and the other productions amounted to 160,400 bushels of Indian corn, 2,612 of wheat, 14,808 of oats, 948 tons of hay, and 4,846 pounds of wool. There were 180 pupils attending public schools. Organized in 1840; capital, Oxford; pop. in 1850, 1,144. VI. A central county of Missouri, intersected by the Osage and its branches, the Pomme de Terre and Grand rivers, and by 2 or 3 small creeks, and comprising an area of 770 sq. m. The surface, which is somewhat uneven, is occupied by alternate tracts of fertile prairie and woodland. Lead is the most important mineral. The staples are grain, cattle, and pork. The value of live stock, in 1850, was \$177,054; the other productions amounted to 154,965 bushels of Indian corn, 11,072 of wheat, 39,415 of oats, and 12,502 pounds of wool. There were 4 tanneries, 1 saw-mill, 1 grist-mill, 1 newspaper office, and 5 churches. Capital, Warsaw. Pop. in 1856, 6,789, of whom 526 were slaves. VII. A central county of Iowa, recently formed, traversed by Cedar river, touched by Iowa river on its S. W. boundary, and having an area of 720 sq. m. The surface is undulating and occupied by prairies and woodlands, the former in larger proportion than the latter. The soil is very productive, and, in 1856, yielded 46,585

bushels of wheat, 49,815 of oats, 321,519 of Indian corn, 27,721 of potatoes, and 3,734 tons of hay. Capital, Vinton. Pop. in 1856, 6,247. VIII. An eastern county of Minnesota, bounded W. by the Mississippi, E. by Rum river; watered by the Flat, the Nokay, and the Elk, and having an area of 1,450 sq. m. The surface is uneven, and, in some places, covered with pine woods, and other timber. Lumber, Indian corn, potatoes, and hay, are the most important productions. In 1850, the county yielded 160 bushels of Indian corn, 3,650 of potatoes, and 1,121 tons of hay; value of live stock, \$11,925. Capital, Sauk Rapids. Pop. in 1857, 688. IX. A western county of Oregon, bordering on the Pacific ocean, bounded E. by Willamette river, and comprising an area of about 1,100 sq. m. The surface is mountainous, Mt. Snelling near the centre of the county being the highest elevation. Cape Foulweather is situated on the N. W. coast. The soil is fertile, well suited to agriculture and grazing, and produced in 1850, 14,913 bushels of wheat, 40 of Indian corn, 198 of oats, and 1,402 of potatoes. There were 1,856 pounds of wool raised, and 41,065 pounds of butter made. Value of live stock, \$195,891. Number of pupils attending schools, 40. Capital, Maysville. Pop. 814.

BENTON, a post village of Lafayette co., Wisconsin, situated 18 miles N. of Galena, in a region abounding in lead mines, which are extensively worked. In 1850, it had 2 churches, 5 stores, a smelting furnace, and about 800 inhabitants. Its growth has since been rapid, and by the census of 1855, had 2,218 inhabitants.

BENTON, THOMAS HART, an American statesman, born near Hillsborough, Orange co., N. C., March 14, 1782, died in Washington, April 10, 1858. His father died when he was 8 years old; his early education was imperfect; he was for some time at a grammar school, and afterward at Chapel Hill, the university of North Carolina, but finished no course of study there, as his mother removed to Tennessee to settle on a tract of land belonging to his father's estate. Thomas studied law, and soon rose to eminence in that profession. He was now elected to the legislature, serving only a single term, during which he procured the passage of a law reforming the judicial system, and of another giving to slaves the benefit of a jury trial, the same as white men. One of his earliest friends and patrons was Andrew Jackson, at that time a judge of the supreme court, and subsequently major-general of the state militia. Benton became his aide-de-camp, and during the war also raised a regiment of volunteers. It was from that service he derived the title of colonel, which has clung to him through life. Notwithstanding the close intimacy between Jackson and himself, which was of the most cordial and unreserved character, a rude and sudden rupture took place in which severe pistol and dagger wounds were given, and produced a rencounter that estranged them for many years. After the volunteers were disbanded Mr. Mad-

ison appointed Col. Benton, in 1818, a lieutenant-colonel in the army, but on his way to serve in Canada, in 1815, he heard the news of the peace and resigned. He now removed to Missouri, and took up his abode in the city of St. Louis. There he devoted himself anew to his profession. Soon, however, engaging in the politics of the day, he was led to the establishment of a newspaper entitled the "Missouri Inquirer." In this position he was involved in many disputes and contentions. Duels were usual at that time, and he had his share of them with their unhappy consequences. In one of them, which was forced upon him, he killed his opponent, Mr. Lucas—an event he deeply regretted, and all the private papers relating to which he has destroyed. His journal took a strong and vigorous stand in favor of the admission of Missouri, notwithstanding her slavery constitution, and when the angry controversy was terminated he was rewarded for his labors by being chosen one of the first senators from the new state. It is from this period, 1820, that his political history and the great influence he has exerted upon public affairs may be said to date. A man in the early prime of life, possessed of a commanding intellect, of large and liberal culture, an assiduous student, industrious, temperate, resolute, and endowed with a memory whose tenacity was marvellous, he soon placed himself in the front rank of those who shaped the councils of the nation. As a representative of the West with the manifold interests of a frontier population intrusted to his care, Col. Benton forthwith devoted himself to securing a reform in the land system of the general government. A pioneer himself in early life, he sympathized with the demands of that class, and his familiarity with the administration of government taught him how fallacious and suicidal was the policy of attempting to derive a revenue from such a source. The general distress which prevailed throughout the country in 1820, and which bore with especial hardship upon the land purchasers of the West, attracted attention to this subject, and afforded cause for the initiative which was taken by congress in liberalizing the system. A measure of relief devised by Mr. Crawford, secretary of the treasury, changing all future sales to the cash basis, reducing the price to \$1 25 per acre, and allowing a discount equal to the difference to former purchasers, afforded material relief. But this was not all that was needed. First, a preëemptive right to all actual settlers; secondly, a periodic reduction according to the time sections had been in market, so as to make the prices correspond with the quality; and thirdly, the donation of homesteads to impoverished but industrious persons who would cultivate the soil for a given period of years, and thereby develop the resources of the country—these were all points essential to the needed reform. Col. Benton apprehended the full scope of these changes, and determined to persist in urging them until they should be accomplished. The

years 1824, 1826, 1828, accordingly found him doing battle for such amelioration of the entire system. A bill embracing these features was moved by him and renewed annually until it at last took hold upon the public mind. At first his speeches attracted more attention throughout the country than in congress, for there his efforts were counteracted by schemes for dividing the public lands or the proceeds of their sales among the states. His firmness and position in the senate as a supporter of the administration of Jackson, gave him great weight with that party, and he was thus enabled so far to impress his views upon the president that they were embodied in one of his messages, and from that date the ultimate triumph of land reform became only a question of time. In his own state of Missouri, there were large quantities of saline and mineral lands which it had been the object of the general government to withdraw from sale and farm out. This injurious monopoly was also aimed at in his measures, and he succeeded in effecting a change which threw all open to occupancy. Intimately blended with the same subject, and moved by the same considerations, were the efforts which he began during the first term of his senatorial service, to effect a repeal of the imposts upon all necessaries of life. These duties bore with great hardship upon the population of the valley of the Mississippi. It was a tribute levied upon them in part to sustain government and in part to protect special interests. In some cases this was most unequal as well as oppressive, and we may cite the salt tax as one that at that time met with more hostility than any other. During the session of 1829-'30, Col. Benton delivered the first elaborate argument against this burden upon a prime necessity, and afterward followed it up in such a manner as to effect its repeal. In directing adventure to explorations in the far west, in fixing the attention of government upon the early occupancy of the mouth of the Columbia, in encouraging overland transit from the Atlantic to the Pacific, Col. Benton was also prominent. He had previously devoted himself to these subjects and written largely upon them in 1819, and no sooner had he taken his seat in the senate than he made direct efforts to engage congress and the public in the great enterprise. From the researches of Clark and Rogers, from the suggestions of Jefferson, from reports of trappers and voyageurs, and from the courses of continental streams, he first elaborated the project of overland connection; and as science expanded, and knowledge of the intervening wilderness became more definite, his views took form in the proposals which are now so largely occupying public attention for a great central railway. The route urged by him as preferable to all others is through the passes of the Rocky mountains discovered by Fremont, known as the Cochetope, and debouching upon California through gaps in the Sierra Nevada. For many years he was the leading advocate and support in the senate of the whole scheme

of western exploration. It will thus be seen that Col. Benton became almost at the outset of his career the exponent of western interests, and though largely participating in all the great measures and political struggles that separated parties, he never neglected what was due to his own immediate constituency. The success which has already attended land reform, the establishment of preemption, the graduation of price, the donations to works of public improvement, all trace their origin to his continuous labors. In subordination to these leading objects, he likewise did much to open up and protect the trade with New Mexico, to encourage the establishment of military stations on the Missouri, and throughout the interior, to cultivate amicable relations with Indian tribes, and to favor the commerce of our inland seas that now bear such a wealth of freights. The marking out of post-roads, and securing appropriations for their maintenance, was especially a work of his own undertaking, and its benefit has been deeply felt in every branch of western trade. Upon the wider theatre of national politics the career of Col. Benton was equally remarkable. In the currency disputes which attended the expiration of the charter of the bank of the United States, the recharter afterward, and the final veto message of Jackson, Col. Benton addressed himself to a consideration of the whole question of finance, circulating medium, and exchange, and brought forward his propositions for a gold and silver currency as the true remedy for existing embarrassments, and the only rightful medium for government disbursements and receipts. Upon this subject he made many of the most elaborate speeches of his life, speeches that evince great research, a close study of finance, and a full knowledge of the evils that so often attend expanded paper issues. In Europe, as well as in America, his expositions attracted great attention, and extended widely his reputation as a debater, a thinker, and a practical statesman. At this time his manner of oratory was deliberate and unimpassioned, his matter full to overflowing with facts, figures, logical deduction, and historical illustration; but almost wholly devoid of that exuberance of wit and raciness of humor which characterize his later discourses. The elaboration which he gave to these views paved the way for subsequent legislation upon the national finance, and did much to consolidate the sentiment of the democratic party in favor of the sub-treasury system which was eventually adopted. It was from the financial policy which he thus enunciated, that he derived the sobriquet of "Old Bullion," which has never forsaken him, and which also he never forsook. Throughout the long and critical struggle between the administration of Jackson and the advocates of the recharter of the national bank, he was the main stay and support of the president in the senate, and acting in strictest unity with his party, held high place in their affection and confidence. The re-

cords of his labors in that behalf will be found upon almost every page of the debates of congress. As the mover of the "expunging resolutions," Col. Benton made himself especially obnoxious to his political opponents, but finally achieved success, and gained a great personal triumph. The motion was to strike from the journals of the senate a resolution of censure upon Gen. Jackson, and the passion of partisans clothed the contest with an importance at the time far greater than will attach to it in the future; but as an exhibition of many traits of Col. Benton's character, persistency, keen, sagacious insight, stubborn devotion to the fame of his party chief, unquailing courage, and confidence of success in the face of an adverse majority, no act of his life was more striking. During the succeeding administration of Mr. Van Buren, much of Col. Benton's time was devoted to the defence of the new financial policy, then being inaugurated. Upon the questions relating to the Oregon boundary, the annexation of Texas, and various other important matters growing out of our foreign relations between the presidential terms of Tyler and Taylor, Col. Benton took a leading and influential part. On the first of those he differed from the democratic administration of Mr. Polk, which had declared for the line of $54^{\circ} 40'$, but the powerful effort of Col. Benton, in which he reviewed the whole controversy, and elucidated the claims of the United States with much force, was not to be withstood, and the administration and party were content to acquiesce in his views, and accept the line of 49° as the northern boundary. During the Mexican war, also, his services, and intimate acquaintance with the Spanish provinces of the south, to whose history he had devoted much attention, proved most useful to the government. It was upon his suggestion that the policy of "masterly inactivity," at first determined upon by the president, was finally abandoned, and a vigorous prosecution of the war urged in its stead. His counsels were much sought also in regard to maturing a plan of campaign and conquest for compelling a peace, and at one time it was proposed by President Polk to confer upon him the title of lieutenant-general with full command of the war, in order that he might carry out his conceptions in person. The project, however, was never consummated. The bill creating the rank of lieutenant-general passed the house, but was defeated in the senate. The acquisition of Mexican territory brought on disputes in congress touching the question of slavery, which, after threatening the peace of the country, were adjusted by the compromise acts of 1850. Col. Benton opposed this compromise, offered by Mr. Clay, as being a vicious system of legislation, as fraudulent in regard to the Texas donation, and as defective and ill-judged in its clause in regard to the fugitive slave law. The acts, however, though defeated as a whole, passed separately.—In the violent rupture which had taken place between Gen. Jackson and Mr. Calhoun, and which made

its mark upon parties as well as persons, Col. Benton had warmly espoused the side of the former at the very outset. Shortly previous to that, the doctrine of nullification had first been broached at a dinner party in celebration of the birth-day of Mr. Jefferson, receiving an endorsement from Mr. Calhoun, and meeting with strong rebuke from Gen. Jackson. After the rupture, political antagonism heightened the animosity of the parties, and nullification assumed threatening proportions in the acrimonious disputes growing out of the tariff regulations. Col. Benton, in his close affiliation with the administration, became the leading democratic opponent of Mr. Calhoun upon this question in the senate, and the divergence which then manifested itself grew and widened as years progressed, and was the fruitful cause of a life-long hostility and opposition between them. The question, however, was arranged, but the compromise of 1833 proved to be only a lull in the storm. The same views in regard to state rights reappeared in the field of politics in connection with the far more complicated question of domestic slavery. This was manifested first in the conflict in the house of representatives in 1835, upon the discussion of abolition petitions, but the action of that body suppressed the cause of strife, and it was not until 1846-'7 that the same policy was renewed. The principles sought to be enforced were admitted to be identical with those of the first nullification movement; the causes assigned and the machinery for enforcement were different. Although representing a slave state, Col. Benton did not on account of the subject-matter involved deviate from the positions he had maintained on former occasions. At the earliest announcement of the new programme in the senate of the United States he stood forth to the attack. It was the beginning of a warfare that was eventually to prostrate himself at home, and drive him from the seat he had so long filled in the senate. On Feb. 19, 1847, Mr. Calhoun introduced a set of resolutions in the senate, declaring the doctrines he wished to insist upon in regard to the territorial powers of congress, the admission of states, and the use of common property, all bearing directly upon the slavery question, and the exciting issues that had been evoked by the proposed restriction known as the "Wilmot Proviso," which required the exclusion of slavery from all new territory to be acquired by the United States. They were immediately denounced by Col. Benton as "fire-brand resolutions." Mr. Calhoun expressed his surprise, stating he had expected the support of Col. Benton, as he was from a slave state. Col. Benton retorted that he had no right to expect such a thing. "Then," said Mr. Calhoun, "I shall know where to find the gentleman;" to which Col. Benton responded, "I shall be found in the right place—on the side of my country and the union." The resolutions never came to a vote, but they were sent to the legislature of every slave state, were

adopted by some of them, and became the basis of after-conflict and party organization. It was determined by their author to make them the grounds of instructions to senators in congress, and for this purpose they were sent to Missouri, and confided to the hands of democrats in the legislature unfriendly to Col. Benton's reelection. Without exciting inquiry, and under the sanction of leading members of the party whose fealty was not then suspected, they were passed in both branches and sent to Washington. Col. Benton no sooner received the instructions than he denounced them as not being expressive of the sense of the people, as containing disunion doctrines, and as designed to produce an eventual separation of the states. He announced that he would appeal from the legislature to the people, and immediately after the adjournment of congress returned to Missouri for that purpose. He began the canvass of the state, and prosecuted it in every section in a series of speeches, which for bitterness of denunciation, strength of exposition, and caustic wit, have scarcely their equal in the English language. The whig party of the state at first sustained his position, but finding a prospect of reaping a triumph of their own from the divisions of the democracy, they changed front, and affiliated with the "Anties," as the democratic opponents of Col. Benton were called. The result in 1849-'50 was the return of a legislature largely democratic, but composed of opposite wings, the Benton men being in the plurality. Many ballotings for senator were had without compromise; but a bargain was at length struck between whigs and anties, and 16 of those chosen by the people as democrats, but unfriendly to Col. Benton, voted for Henry S. Geyer, who was elected. Mr. Geyer was a whig, but had committed himself to the anti-Benton party in a letter prior to his election. Many of his party following his lead, they soon coalesced with the opposition democrats, and in after campaigns, by adroit management, they gained control of the state government. This was chiefly effected through the instrumentality of Mr. Sterling Price, who, although elected governor as a supporter of the views of Col. Benton, yet, after a pretended compromise of the two democratic wings, was no sooner sworn into office than he changed over to the opposition, carrying several of the other state officers along with him. To vindicate his position, and to break up the ascendancy which the so-called nullification party was thus acquiring, Col. Benton, in 1852, made a more direct appeal to the people in the congressional district in which he resided, announced himself a candidate for congress, and was elected over all opposition. In the session that followed he at first gave a warm support to the administration of President Pierce, but that soon falling under the control of the adherents of Mr. Calhoun, Col. Benton withdrew his support, and the administration in turn making a war upon him displaced from office all his

friends throughout Missouri. Soon the repeal of the Missouri compromise was mooted, and became a party measure in the shape of the Kansas-Nebraska bill. Against this Col. Benton exerted himself with all his strength, delivering a memorable speech in the house that did much to excite the country against the act, but failed to defeat its passage. The next election coming on in 1854, Col. Benton was defeated in his own district by a combination of his old opponents with the new American party that had just arisen, and Mr. Kennett was returned in his stead. Retiring from active politics, he then determined to devote his leisure to writings and study more congenial to his age; but was prevailed upon by his friends to suffer his name to be used as a candidate for governor of Missouri in the election of 1856. Once more laying aside the pen, and starting forth to canvass the state, he was received everywhere with enthusiastic applause. Immense masses of people gathered to hear him, his old political friends rallied to his standard, and his course became a triumphant procession. But a third list of candidates was in the field representing the American party, although most of its members sympathized with Col. Benton, and those who did not voted for his adversary instead of the candidate of their own party. Mr. Trusten Polk (national democrat) was thereby elected by a trifling plurality. The result of Col. Benton's canvass, however, was to restore, in a great measure, the conservative feeling of the state, and to prepare the way for a more liberal policy upon all domestic subjects. His friends up to the hour of election were sanguine of his success. He himself was never so, but felt himself fully repaid for all his toil by the impress he had made upon public opinion, and the reaction he had effected against disunion politics. In the presidential election of Nov. 1856, Col. Benton supported Mr. Buchanan in opposition to his own son-in-law, Col. Fremont. The reason assigned by him was a confidence that Mr. Buchanan, if elected, would restore the principles of the Jackson administration, and the apprehension that the success of Col. Fremont would engender sectional parties fatal to the permanence of the union. He soon after saw occasion to modify these opinions, and although in retirement, he was inclined to oppose the administration of Buchanan and to unite with the opposition that presented itself in the republican party. After his defeat in 1856, Col. Benton devoted his time again to literary pursuits. Even before that time he had begun his "Thirty Years' View" of the working of the government, of which the 1st volume was published in New York in 1854. It is a retrospect of the period during which he held a seat in the senate of the United States, and presents a connected narrative of the times from Adams to Pierce, developing much of the secret history of the men and politics of that epoch. No sooner was that off his hands than he engaged in the

still more laborious task of condensing, revising, and abridging the debates of congress from the foundation of the government to the present time. In this work, even at the advanced age of 76, his daily labors were almost incredible; it was finally completed down to the conclusion of the great compromise debate of 1850—in which, along with Clay, Calhoun, Webster, and Seward, he had himself borne a conspicuous part—upon his very deathbed, where he dictated and revised the final portions in whispers, after he had lost the ability to speak aloud. Some months previous to this, in an interval of leisure, he also wrote a review of the decision of the supreme court in the Dred Scott case, which attracted great attention. With a strong, industrious intellect, a dominating character, and quick appreciation of men, Col. Benton exercised a prominent influence upon national affairs. In Missouri his power was at one time boundless, and throughout the West he moulded public opinion to his will for many years. While adhering to strict party lines he was able to effect almost every thing he attempted, and often standing forth alone he drew his party with him against the policy of presidents and cabinets. In his last attempt of this kind, however, he failed, and was forced to relinquish office as a consequence; but this crowning struggle was a testimony to his independence and sense of duty that will contribute no less to his fame with posterity than the honors which he received through party allegiance.—Col. Benton was married, after becoming senator, to Elizabeth, daughter of Col. James McDowell, of Rockbridge co., Va. His surviving children are 4 daughters—Mrs. William Carey Jones, Mrs. Jessie Ann Fremont, Mrs. Sarah Benton Jacob, and Madame Susan Benton Boileau, now at Calcutta, wife of the French consul-general. Mrs. Benton died in 1854, having been struck with paralysis in 1844, and from the time of that calamity her husband was never known to go to any place of festivity or amusement.

BENTZEL-STERNAU, CHRISTIAN ERNER, count, a German author and statesman, born at Mentz, April 9, 1767, died in Switzerland, Aug. 18, 1850. He made a mark upon the literary world of Germany by his *Goldene Kalb* (Golden Calf), which appeared in 1802 and 1804, and to which he added *Der steinerne Gast*, *Der alte Adam*, satirical novels, full of humorous and philosophical delineations of men and things. He translated Young's "Night Thoughts," and Corneille's *Cid*; and for several years he edited the *Jason*. In 1806 he was at the head of the ministry of the interior, in Baden; in 1812, finance minister of what was then the grand duchy of Frankfurt. In politics he was a liberal conservative. He became a convert to Protestantism, Aug. 19, 1827.

BENUA, with the prefix Orang, signifies, in the Malay archipelago, the aborigines of the Malay people. The term is applied chiefly to the wild mountaineers of the Malay penin-

sula, and to some of the semi-barbarous tribes to be found on the small islands in the straits of Malacca, and in the Rhio-Linga group. In some parts they are confounded with the Orang-Laut, and with the Bajua, or sea-gypsies, who are all of genuine Malay stock, and speak the language with the same purity as at Menancabow, the centre of Malayan civilization. The Orang-Benua are on land, what the Bajus are on sea—wandering vagabonds, subsisting upon the spontaneous productions of nature. They have been regarded by the civilized Malays as little superior to the orang-outang, the man-like ape of the Bornean and Sumatran forests; but since the establishment of the British free port of Singapore, and more especially since gutta-percha has become an important article of commerce—a tree gum, chiefly to be found in the almost inaccessible jungles, through which the Orang-Benua has roamed for ages, an unreclaimed savage—their habits and condition have greatly improved. All the gutta-percha exported from Singapore is collected by the hands of these Malay outcasts. "Nearly every man in the interior of Johore and Pahang," says Mr. Logan, in the "Journal of the Indian Archipelago," "is now engaged in searching for *taban* trees, from which the best gum is obtained; and this they exchange with Malay and Chinese traders, for articles of clothing, and for utensils and conveniences for habitations, to which they are attaching themselves; and they also begin to purchase implements for husbandry." There are many tribes of the Benua, called Jakun, Sakai, Sletar, Mintira, Sabimba, and Basia, which are the names of rivers near which they are found.

BENZENBERG, JOHANN FRIEDRICH, a German astronomer, born May 5, 1777, at Schöller, near Elberfeld; died June 8, 1846. His most important work is *Ueber die Sternschnuppen* (Hamburg, 1839). He built an observatory, which he bequeathed to the city of Düsseldorf.

BENZOIC ACID, a product of the resin, benzoïn, obtained by distillation or precipitation, in the form of acicular crystals and pearly scales, of specific gravity 0.857. When pure it has no odor, but as usually prepared, containing resin and a little essential oil, it possesses the aromatic perfume of benzoïn. It is soluble in water, melts at 249°, sublimates in a current of air with a gentle heat. Benzoic acid also exists in all balsams (as these are defined in France), in vanilla, cinnamon, and the urine of infants, and that of the dog and of herbivorous quadrupeds. It may readily be obtained from that of the horse and of the cow. Its chemical composition is represented by the formula $C_6H_5O_2 + HO$. It forms, with alkalies and earthy and metallic oxides, salts called benzoates. It is used, combined with ammonia, in chemical analyses for precipitating sesqui-oxide of iron in neutral solutions.

BENZOIN (Malay, *kaminian*), gum-benjamin of commerce, an odorous resin extracted from the *styrac benzoïn*, a tree which attains a considera-

ble height, and is the peculiar product of Bencoolen, Batak, and Palembang territories, in Sumatra, and Brunai territory in Borneo. The tree is cultivated and raised from the small brown nut which it produces. When the plant has attained its fourth year, and its stem has a diameter of 8 inches, on the eastern coast of Sumatra, and 6 years, and 10 inches diameter, on the western coast, it begins to yield its best sap, which flows from the bark, and which is obtained by making an incision therein near the ground. That obtained during the first 2 years after tapping is of a creamy, or light saffron tint, and is soft and fragrant; for 2 or 3 years more, it produces an inferior quality, of reddish hue, and harder than the best; after this time, the sap ceases to flow, the tree is cut down, and a very inferior resin is obtained by scraping the inner surface of the bark and the stem. In the Batak country it is brought to the markets on the west coast of Sumatra in cakes, called *tampang*, of different weights, and these cakes constitute the chief currency of the Batak, who do not make use of coined money. The benzoïn obtained in Palembang territory is mainly collected by wild tribes, in the lowest state of civilization, the Kubu in the Rawas and Batang-Lekoh districts, and the Kumring further south. The Palembang resin is generally of an inferior quality, being mostly spontaneous exudations of wild trees, collected by these wild tribes. It is said of the Kubu, by Lieut. de Sturler of the Dutch E. I. army, that when Malay traders come to their country for benzoïn, they go to appointed places, beat a gong, deposit trinkets and pieces of colored cloth, and then retire; after a time, the timorous savages emerge cautiously from the recesses of the forest, take what has been left for them, and leave benzoïn in the place, which is generally more than an ample equivalent. This account is confirmed by recent travellers. There are no complete reports of the whole product of the resin in the archipelago. From the west coast of Sumatra, in 1855, was exported benzoïn of the value, in India markets, of 84,500 florins, about \$15,000. According to the Singapore price current, in 1857, it was worth, 1st quality, \$89 per picul (133 lbs.); 2d sort, \$45 to \$60; 3d sort, \$16 to \$20. The greater portion of this resin is made use of as an incense in Roman Catholic countries, and where the Greek church prevails, in the ceremonials of that religion. It is sometimes employed in medicine, being considered a valuable emetic and styptic; and still more in perfumery. The odor of the best resin somewhat resembles that of the vanilla bean. Being soluble in spirits, and not in water, it is erroneously called a gum. Its density varies according to quality, from 1.068 to 1.092. Beside benzoic acid, and a small quantity of essential oil, it contains 8 different kinds of resins, which have not yet been employed in the arts. It is used in several kinds of fine varnishes and lacquer work, on canes and snuff-boxes, which emit a

faint vanilla odor when warmed with the hand. Benzoin is supposed, by some writers, to be the malabathrum of the ancients. Pliny and Dioscorides describe it very accurately; and mention is made in the *Periplus of the Erythraean sea*, of malabathrum, an article of commerce on the Malabar coast, said to be brought from a country further east.

BENZOLE, named by the French chemist Pelouze, one of the highly carbonized products obtained by the distillation of coal tar. It was discovered by Prof. Faraday, in experimenting upon the oils condensed from oil gas. Mitscherlich afterward obtained it by distilling benzoic acid with hydrate of lime. It is also obtained by passing the vapor of benzoic acid through a red-hot iron tube. Various processes are given for preparing it in the large way. The material employed for producing it is the crude coal naphtha, that comes over in the first distillation of coal tar. This is rectified by distilling it several times from a metallic still, and subjecting the vapor at last to a low temperature (about 32° F.). Most of the other substances associated with it condense in the worm of the still at higher temperatures, and fall back into the still. The benzole is then purified by redistilling, at a heat between 176° and 194°, and by a new distillation freed from $\frac{1}{4}$ of its volume of sulphuric acid. Filtering at a low temperature is also applied between the distillations, to remove any insoluble impurities. Benzole, when pure, is a clean fluid, like alcohol, without color, very volatile, possessing an ethereal odor, and of specific gravity 0.85. Its gravity, however, varies with the mode of its preparation, and it is stated that it is produced at the works at Oloversport, Ky., weighing only 6 pounds to the gallon, which is $\frac{1}{4}$ the weight of water, or specific gravity 0.75. As prepared in England, by Mansfield, from the crude naphtha spirit obtained from coal-tar, it boils at 176° F. At 32° it ceases to evaporate, and solidifies in forms resembling white wax or camphor, and like these, will then burn without melting. Slowly cooled, when liquid, it takes beautiful forms of cruciform leaflets, which are perfectly transparent, and cluster together on each side of a central axis, like the leaflets of the fern upon its petiole. It will not mix with water, but is soluble in alcohol and ether. It has the solvent properties of these fluids, and is applicable to a great variety of useful purposes in chemistry and the arts. Its composition is 12 atoms of carbon and 6 of hydrogen— $C_{12}H_6$; but Dr. Muspratt and others, who give this formula, believe that it will prove to be a hydride of phenyl radical, thus expressed $(C_6H_5)_2H$. It may then properly be named hydro-benzide.—Numerous uses have been proposed for benzole; and, as the manufacture of it is now extensively entered upon in Manchester, Glasgow, and other large towns in Great Britain, and also in Kentucky, Ohio, Pennsylvania, and at Williamsburgh, near New York city, it is probable it will become an article of great im-

portance, particularly where alcohol, ether, and other alcoholic products are so costly as they are in Great Britain. But the most important use proposed is for illumination. It has been found that almost any gas, or even atmospheric air, passed through benzole, or some other equally volatile hydro-carbon, takes up a portion of its vapor, and acquires great illuminating power; that of coal gas passed over its surface is very much increased, and steam is thus rendered illuminating. The first suggestion of this use of benzole was by a man named Beel, of London, who took out a patent, about the year 1836, for forcing common air into a reservoir containing highly rectified coal naphtha (benzole), and burning the vapor carried along by the air at a burner near the reservoir. In this country, the subject was taken up about the year 1851, by different parties, the first machines in successful operation, of which we have any knowledge, being those of Mr. Oliver P. Drake, of Boston. A current of atmospheric air, by means of a simple bellows carried by clockwork, was forced through a mixture of benzole, alcohol, and water, and ignited at a gas burner. The flame was remarkable for its clearness and the intensity of the light, and resembled in color more the light of the sun than does any other artificial light. A difficulty was experienced in its use by the benzole ceasing to evaporate at a temperature approaching that of the boiling point of water, and the æri-form mixture, when conveyed through cold tubes, was liable to deposit a portion of its carbonaceous load, and produce a light of most uncertain brilliancy. At a high temperature, on the contrary, the benzole vapor was much more readily taken up, and produced a smoky light, so that it could not be used in very warm weather. To obviate this difficulty, several improvements have been introduced, and, by the use of benzole unmixed with other substances, and furnished by a regulating apparatus in suitable quantities, according to the temperature, the light has burned much more satisfactorily through the ordinary range of temperature to which it is ever likely to be exposed when protected from the weather without. Benzole of great purity is found to do better than the more common article formerly employed, and especially when introduced to the current of air diffused through porous diaphragms, and in a chamber admitting of the thorough mixture of the air and benzole vapor. Such is the apparatus now manufactured under the patents held by Mr. Jesse Carpenter. From the beauty, economy, and convenience of the light, it is an extremely desirable object to perfect the apparatus, that its use may be practicable at all temperatures. The demand it has created for benzole has caused the price of this to be advanced from 56 cents, at which it was formerly rated in England, to \$1.50 per gallon in this country. But the new works which have undertaken its manufacture, will no doubt cause its price to be reduced again. Still, at the higher

rate, it is found, according to a report made in Jan. 1856, by a committee appointed to examine into the merits of the light at the Utica mechanics' fair, that the cost of a light equivalent to that produced by a coal-gas burner, consuming 6 cubic feet per hour, is but 1½ cent per hour; while that of a coal-gas light, at the rate of \$8 50 per 1,000 feet, is 2½ cents per hour. The quantity of benzole equivalent to 1,000 feet of coal gas, is, however, variously estimated, probably from the different qualities of different manufacturers, and the different methods of testing it. The English authorities, in 1850, estimated that a gallon of the fluid possesses an illuminating power equal to about 1,000 cubic feet of gas. In this country, according to the experiments of Mr. Drake, this is regarded as too low an estimate, 3 gallons being required to produce this effect. In the small cost of transportation as well as in cleanliness in handling, benzole possesses great advantages. The pure article is a pleasant substance to use, having an agreeable odor; but much of the common benzole has a strong disagreeable smell of coal tar. Beside being used in the manner described, benzole may also be mixed to advantage with alcohol or with naphtha, for producing a fluid of great illuminating power, and very volatile, without involving danger of explosion.—The substances readily dissolved by benzole are stated to be various resins, mastic, camphor, wax, putty, fatty and essential oils, caoutchouc, and gutta serena. The solution with either of the two latter has the property of the collodion (or gun-cotton dissolved in ether), of quickly evaporating, and leaving a film like a thin membrane. In this way, it may be used as an application to cuts and burns. Shell-lac, copal, and gamboge are sparingly dissolved by it. It dissolves iodine, phosphorus, and sulphur, and when boiling takes up the last in large quantity, of which the greater part, however, when cooling, separates by crystallizing. Processes have been patented in England for its employment in removing paint, tar, oil, &c., from different fabrics, and from leather, wool, cotton waste, &c., and for cleaning gloves. Used thus in the large way, the benzole is distilled over and saved. No substance has been found so well adapted for removing the oil from the wool dyed, before it is spun into carpets, &c., at the mills in Yorkshire. The colors are not affected, while the greasy matters are entirely dissolved out. Treated with nitric acid it gives rise to a substance called nitro-benzole, which is used as a substitute for the oil of bitter almonds in perfumery.

BEOWULF, TALE OF, an Anglo-Saxon heroic poem, published in Saxon and English by J. M. Kemble, London, 1835, and later by Thorpe and by Wackerbarth. A metrical translation in German was produced by L. Ettmüller (Zurich, 1840). Leo says it is the oldest monument of German poetry in the Anglo-Saxon dialect, and of great interest in the history of the development of German literature. It is evidently of

continental and pagan origin, but, in the shape in which it has come down to us, it is partially but not entirely Christianized.

BÉRANGER, PIERRE JEAN DE, the most illustrious of French lyric poets, born in Paris, Aug. 19, 1780, died there July 16, 1857. His father, notwithstanding his pretensions to noble origin, was book-keeper to a grocer, and married a pretty young milliner, the daughter of an honest tailor, by the name of Champy, who kept a small shop in the rue Montorgueil. Here the future bard came into the world, which fact he afterward commemorated in one of his most sprightly songs, *Le Tailleur et la Fée*. He sprang thus from the people, and in spite of the particle *de*, which, owing to his father's prejudice, remained affixed to his patronymic, he never missed an opportunity of proclaiming his plebeian birth; *Je suis vilain, et très vilain*, is the burden of one of his earliest effusions. After being put to nurse for 8 years, he was brought back to his grandfather's, where he lived for more than 6 years, little cared for by his mother, and entirely neglected by his father, while he was the pet of the old folks. In the beginning of 1789 he was sent to a school in the faubourg St. Antoine; and, from the roof of the house, he witnessed the taking of the Bastille by the people, which event made the deepest impression upon his youthful mind, as appears from a song, *Le 14 Juillet*, written 40 years later. His father, being unable any longer to pay his board at school, sent him, without previous notice, to a sister of his, a widow without children, who kept a small inn near Péronne, in Picardy. She at first hesitated to receive the unexpected guest; but soon, moved by sympathy and affection, she cried, pressing the child to her bosom: "Poor forlorn being, I will be your mother." And she most faithfully kept her word. Under the guidance of this worthy woman, whose mind was far above her humble station, the young Pierre was brought up in a somewhat irregular way; but received lessons intended to make him a good man, and a thorough republican. This last character was singularly enhanced in him by the practical training he was submitted to, at a school established by M. Ballue de Bellanglise, formerly a member of the legislative assembly, and, according to Béranger himself, a sort of republican Fénelon, and a true philanthropist. In this school the boys were formed into a kind of democratic association, electing their own officers, as mayor, councillors, justices of the peace. They debated political questions; on important occasions, speeches were publicly delivered by the young politicians, and more than once they sent up addresses to the convention, and to Robespierre. Béranger distinguished himself among his young colleagues as a clear and cogent speaker; so much so that the good Ballue used to prognosticate that the boy would at some future day "make his mark." Patriotism, which, as he says, was the great, if not the only passion of his life, was already burning in the heart of the

boy, and he feelingly narrates his emotions when hearing of the victories or the reverses of the French armies. But the time had come when it was necessary for him to learn a trade; consequently, through the advice of his good friend, M. Ballue, he entered the printing office of Lainez, a bookseller, who evinced great kindness toward his apprentice. The latter did not acquire marked proficiency as a printer, but showed an inclination to poetry, making at that time some rough attempts at rhyme. Toward the end of 1796, the young printer was called back to Paris by his father, who was then engaged in all sorts of stock-jobbing and financing speculations, as well as in Bourbon conspiracies. A large amount of the money made by his exertions was spent in these conspiracies, from which he was known as the "banker of the royalists." Young Béranger became the assistant of his father; and however repugnant the business was to his feelings and opinions, he evinced so much tact and ability that, according to his father, he was sure to become "a great banker." Unhappily, in 1798, the firm failed; and, although reduced to very straitened circumstances, the young man found himself greatly relieved. "My poverty," he says, "was not barren of pleasure. I lived in an attic on the boulevard St. Martin, and the most magnificent sight opened before my eyes. I had no money, no hope, no prospect of fortune, it is true; but I was free from all the trouble and disgust connected with the business I had been engaged in against my taste and feelings. To live alone and make verses at my ease, I considered to be true happiness." Friendship and love also contributed to embellish his life; and, as far as his slender means would allow, he heartily joined in popular amusements. Graceful remembrances of that time are to be traced in several of his liveliest pieces, such as *Le grenier* and *Mon habit*. This careless life lasted several years, during which he sketched many projects of great works, and wrote poems which were never destined to be brought to light, among the number a pastoral poem, *Le pèlerinage*, an epic, *Olovis*, and several comedies, two of which were five-act plays. Meanwhile he had seen the revolution of the 18th Brumaire, which he applauded, like the majority of France, and had been on the point of being killed in the rue St. Nicaise, by the infernal machine, directed against the first consul. Although he did not witness with indifference the great changes which were taking place in his country, his interest was especially concentrated in his poetical performances; but, unfortunately, the scanty pittance upon which he depended, was constantly diminishing, and at the end of 1808 penny stared him in the face; his gold watch and other valuables, relics of better times, had been pawned long ago; his clothing was in the poorest condition, and none of his friends was well enough off to offer him relief. In this extremity he wrote a letter to Lucien Bonaparte, brother of the first consul, sending him, as specimens of

his literary attainments, two poems, *Le réta blissement du culte* and *Le déluge*. He had scarcely any hope in the success of this last shift; so we may imagine his joy, when a very kind answer invited him to an interview. Borrowing a dress appropriate for such a visit, he repaired to his new protector. Lucien, whose interest had been awakened by the letter, was much pleased with the young man, gave him advice and encouragement, and relieved his wants by resigning to him his pension as a member of the French institute. This, being an annual income of a little less than \$200, was a fortune to the destitute young poet. The next year, 1806, he was engaged by the painter Landon to write the notices for the *Annales du musée*, an illustrated publication, giving outline engravings of the great paintings in the Louvre gallery. This added for 2 years \$350 to his annual income, and enabled him to help his father and secure a degree of comfort for his old grandmother, who had been entirely ruined. This was indeed a bright epoch in the life of our poet, who more eagerly than ever devoted himself to his poetical pursuits. In 1809, being introduced to Fontanes, the grand master of the imperial university, by his friend Arnault, he was appointed to an office worth about \$200; which salary was gradually increased to \$400. Béranger's life now began to take a more regular shape, and his talent to flow in its proper channel. He had occasionally written songs, mostly of a gay turn, as they were designed to enliven his joyous meetings with his friends whom he visited at Péronne; but however successful in his attempts, he was not conscious that this was his true calling, and would ultimately secure him durable fame. Now, however, he paid more attention to lyrical poetry, and felt that it might possibly be treated in such a manner as to take rank among the most creditable branches of literature. Some of the pieces which he wrote during the following years, being circulated in manuscript, created a sensation—*Le sénateur*, *Le petit homme gris*, *Les guenue*, and *Le roi d'Yvetot*, among the number. This success procured for him the acquaintance of Désangiers, the well-known song writer of the time, and a very kind-hearted man, who took a decided fancy for his young competitor, and prevailed upon him to become a member of the celebrated club, *Le caveau*, which had been reestablished about 1811. Henceforth his fame increased rapidly; his gay satires, and even the licentious strains in which he indulged, according to the custom of his contemporaries, were received with applause, and gave him a rank among the most renowned lyricists. The disasters of 1814 and 1815, the 2 invasions of France by European armies especially, fell like a bitter pang on the patriotic heart of Béranger, and contributed to give a new and higher direction to his poetical vein; he felt that song could be made the medium of general feeling, and celebrate at once the glory and misfortunes of his beloved country. From that

time he became the truly popular or rather the truly national bard of France. The 1st volume of Béranger's songs was published in 1815, and eagerly sought for, although it contained very few political pieces. Its popularity, however, excited suspicion in the administrative department to which the poet belonged, and a friendly recommendation to stop such publications for the future was addressed to him by his chief. Béranger, who was now fairly launched on his new course, paid no attention to this notice, and went on to produce new pieces, which, like their predecessors, were extensively circulated by singing long before they were collected in book form. These were published in 1821, but previous to issuing the volume, Béranger left his office, to save the minister the trouble of discharging him. The sale was immense, and the songs resounded all over the country. Judicial proceedings directed against the poet, on account of his bold attacks upon the government, only added to his popularity and promoted the diffusion of the volume. Brought before the courts, he was sentenced to 3 months of imprisonment and a fine of 500 francs. This at once gave a more powerful impetus to his fame and to his inspiration: new songs issued from the gaol, and were repeated from one end of France to the other. Béranger, or rather his songs, had become a political power. A 3d volume, which appeared in 1825, though scarcely less bold than the preceding, was treated with more forbearance by the government; but the 4th, published in 1828, was severely dealt with; an imprisonment of 9 months, and a fine of 10,000 francs, was the penalty imposed on the song-maker, who was now proclaimed the greatest poet of the day. This was the most brilliant period of his career. Béranger had meanwhile secured great personal influence among the chiefs of the opposition party; his advice was sought for and respected; his known disinterestedness, his freedom of speech, which was always united with the utmost courtesy, his want of personal ambition, his generous disposition, his marked sympathy for young men, every thing contributed to endear him to all, and peculiarly to the inferior classes. Next to the memory of Napoleon I. no name enjoyed a greater popularity than that of Béranger. He was instrumental, at least through his songs, in the revolution of 1830. He afterward promoted the election of Louis Philippe as king, being convinced that France was not yet prepared for a republican government, but refused all appointments or rewards proffered by the king himself or his ministers. He desired to live as a true philosopher, contented with the little income secured by the sale of his songs, and desirous of preserving his personal independence. His 5th volume, published in 1838, affords evidence of his settled determination to be nothing but a song-maker; he did not even wish to continue a political adviser. Although he acted as if willing to be forgotten, there was no abatement in his popularity during the reign of Louis Philippe; and

when the revolution of February, 1848, broke out, the name of Béranger was still among the brightest in the eyes of the people. They sought him as their representative; and in spite of his decided refusal, they elected him to the constituent assembly; he had to send in his resignation twice before it was accepted. The last years of the national bard were passed in comparative retirement, amid a small circle of intimate friends; but the admiration which he inspired drew incessantly around him crowds of visitors, whom he could scarcely avoid by living as privately as possible in various villages or provincial towns. On the news of his last illness, the secluded street where he lived, in one of the most quiet parts of Paris, was filled up by the multitude, who were anxious to show their sympathy for him, and eagerly waited for hourly accounts of his health. His death threw a veil of sorrow not only over Paris, but over all France; and his funeral was attended by a host of mourners. Every one felt that France had lost a great poet and a great citizen. The songs published by Béranger during his lifetime have been reprinted under every possible form, and millions of copies have been circulated among all classes of Frenchmen. No poet could, however, so well have dispensed with the printing of his works without injuring his fame. His songs are familiar even to those who are unable to read. Beside his printed works, he left 92 songs written from 1834 to 1851, and a memoir of himself, both of which were published a few months after his death. The former cannot add to his poetical renown; but the latter, which is a perfect gem of autobiography, furnishes convincing evidence that in him simplicity, honesty, and goodness of heart, were united to genius. Partial translations or imitations of Béranger's songs have been published in England and in the United States. We must notice especially the version of 200 choice pieces by Mr. William Young, of New York.

BERAR, a large province of India, situated near the centre of the Deccan, and added to the British possessions in Dec. 1853. It lies partly in the territory of the Nizam, or Hyderabad, and partly in Nagpoor, extending from lat. $17^{\circ} 48'$ to $22^{\circ} 48'$ N., and from long. $75^{\circ} 20'$ to $82^{\circ} 48'$ E. Area, 56,728 sq. m.; pop. 2,550,000. It consists mainly of an elevated tract, bounded N. by the Sautpoora range, and surrounded by mountains which enclose it like a valley. It is watered by the Wurda, Wynegunga, Khahan, Taptee, and Mahanuddy. The soil is very fertile, and well suited to grain, tobacco, sugar, and cotton. The wheat is considered the best in India; it is ready for the harvest 3 months after it is sown, and leaves time for a crop of Indian corn. Agriculture is the chief occupation of the inhabitants, but is conducted in a rude manner, with inferior implements. Since the British have had possession of the country, however, there has been some improvement. There is no foreign and very little domestic

trade, the execrable state of the roads proving as severe a check to traffic as the heavy transit duties exacted by the native rulers. Sheep and cotton are transported to Kamgaum in the N. W. part of the province, and thence forwarded to Bombay, but quantities of cotton are lost on the way, and the few sheep which survive the hardships of the route are greatly reduced in flesh. A railroad to the W. coast and the removal of oppressive imposts are among the measures of reform promised by the British, and a belief is entertained that with the impulse thus given to industry, Berar will soon contribute largely to supplying cotton for the English market. The common people of this province are exceedingly illiterate. Only the children of the Bramins and merchants receive any education, and it is questionable whether the little they are taught is of much benefit to mind or morals. It is a rare thing for a farmer to know how to write his own name, and even the studies of the Bramins are usually confined to books of theology. —The ancient country of Berar, which was much more extensive than the modern province, was one of the 5 original independent kingdoms of the Deccan. In the 17th century it was annexed to the Mogul Empire, on the decline of which it was overrun by the Mahrattas and afterward divided between the Peshawar and the rajah of Nagpoor. The latter prince having joined with Dowlat Row Sindia against the British in 1808, was forced to cede to them the province of Outtack, together with Sumbulpoor and Patna, and to the Nizam some provinces on the frontier of Hyderabad. In 1817, Appah Sahib, the next rajah, took arms against the British, who accordingly deposed him, and governed the country from that time until 1826, in the name of Bajee Rao Booslah, then a minor. The country was given up to the young rajah on his coming of age, and on his dying without heirs in Dec. 1858, was added to the possessions of the East India company. The remainder of Berar, comprised in the dominions of the Nizam, is included in the territory recently assigned to the British for the support of the military force called the "Nizam's Contingent."

BÉRARD, FRÉDÉRIC, a French physician, born at Montpellier, Nov. 8, 1789, died April 16, 1828. When only 20 years of age, he wrote a thesis entitled "Theory of Natural Medicine, or Nature considered as the true Physician, and the Physician as an imitator of Nature." He afterward went to Paris, where he was engaged to write in the "Dictionary of Medical Science." In 1816 he returned to Montpellier as professor of therapeutics in a private course of lectures to the medical students of the college. At this period he published a work explanatory of the "Doctrines of the Medical School of Montpellier." Bérard returned to Paris in 1823, in the hope of obtaining a professorship at the school of medicine, but was not successful. With Dr. Rouzet, he published Dumas' work on "Chronic Diseases," with instructive commentaries, 2 vols. 8vo. In

1828 he also published in Paris his work on "The Relations of the Physical and the Moral Organism, as a Key to Metaphysics and the Physiology of Mind." In this work he explains his own views of human nature and the principles of life, in opposition to the views of Cabanis. He also took occasion to publish at the same time, a manuscript letter of Cabanis, on "Primary or Final Causes," accompanied by numerous annotations.

BÉRARD, PIERRE HONORÉ, a French surgeon and physiologist, born at Lichtenberg, in 1797. He pursued his studies unaided by fortune, and in 1831 was elected professor of physiology to the faculty of medicine of Paris, became dean of that faculty in 1848, and in 1852 was appointed by the president of the republic inspector-general of the medical schools, and entered into the new upper council of public instruction. He has published historical notices of Broussais and of Haller, has enlarged the 10th edition of Richerand's "Elements of Physiology," has begun the publication of a great work on physiology, and has made many reports to the academy of medicine. —Auguste, brother of the preceding, a French surgeon, born at Varrains, near Saumur, Aug. 2, 1802, died at Paris, Oct. 15, 1846. He studied at Paris under the guidance of his elder brother, Pierre, became professor of clinical surgery to the faculty of Paris, was one of the founders of the society of surgery, and a member of the academy of medicine, and wrote numerous professional treatises.

BERAT, or ARNAUT BELIGRAD, a town of Albania, on the river Beratino, the ancient Apsus; pop. 8,000. It is the seat of a pashalic and Greek archbishopric, and was taken by Ali Pasha from his rival Ibrahim. Amurath II. captured Berat, and his troops held it notwithstanding a desperate attempt by Scanderbeg with a strong body of Italian auxiliaries to retake it.

BERBERA, a trading place of Africa, on the southern shore of the gulf of Aden, in the territory of the Somaali, and directly south of the British settlement of Aden, in the southern part of Arabia. There are few permanent inhabitants in Berbera, on account of the hot monsoons, which blow from the last of May to August. It is simply a place for traffic from the interior. The yearly trade commences about Nov. 1, and continues to increase until March, and finally closes in May. The traffic is mostly in slaves, cattle, sheep, gold dust, hides, coffee, myrrh, benzoin, ostrich feathers, elephants' tusks, and gum arabic. The traders are principally from Harrar, a large settlement lying a little south of west from Berbera, and about 200 miles distant. The tribes surrounding Berbera, and nearer the coast, also visit it. The vessels trading to that port are from the southern parts of Arabia and from Hindostan, bringing cotton and silk goods, beads, wire, sugar, rice, copper, iron, and zinc. Berbera is a desert spot, and the country around for 10 miles back affords no pasturage for the cattle,

which must therefore be sold soon after their arrival at the port. The slaves are many of them captured from among the Christians of Shoa, in Abyssinia. The name of this town may perhaps be traced to the same etymological origin with Berber and Barabra, "dwellers of the desert."

BERBERS. In that portion of Africa known to moderns as the Barbary states, one rude wild clan stands alone, refusing to join the *mêlée* that has long ago obliterated nearly every mark of nationality among those who have been its subjects. They have given their name to the Barbary states, and impressed their character on their history. The origin of the name Berbers has been the subject of much conjecture. Some Arabian writers have derived it from the Arabian word "Bar" (desert); others from "Beberna" (murmuring), as descriptive of the sound of the North African language. Others still say that Ber was the son of one of the shepherd kings of Egypt, and that from him comes the name "Berbers;" while others affirm that Ber was a descendant of Madzigh, who was the progenitor of the whole race. Consequently, the Berbers call themselves Amazirghs; they do not know the name Berbers. However the question of the origin of the term may be settled, it leaves the origin of the tribe itself still open. In regard to this, opinions are quite as various. The most probable conclusion is that they came originally from the land of Canaan. This opinion is supported by tradition, by monumental remains, and by history. The Berbers themselves have a tradition that they came from Canaan; and some of the Arabians say that the Berbers are a colony of Philistines, and others that they were Amalekites driven out by Joshua. Procopius asserts the same origin for them. He says that 2 marble columns were at Tanger in his time, with inscriptions in Phœnician: "We fly from the robber, Joshua, the son of Nun." And it is certain that the Jews who had settled in Spain before A. D. 694, called the Jews who had settled across the straits, in Barbary, "Philistines." By this they doubtless meant to say that their brethren, settling in North Africa, had thus mingled with Philistines (whom tradition had so long assigned to that locality). The Berbers are, without much doubt, a remnant of the discomfited Canaanites. If it appears strange that they should have wandered so far, it is to be remembered that the country was not altogether unknown to them. They lived on the borders of the Mediterranean. They must fly or be exterminated. Northward they could not fly, for there lay the invading force in the heights of Ajalon and Michmash. Eastward they would not, for they were dwellers by the sea. Southward, they must keep the sea-coast, or plunge into the deserts of Arabia. This would take them to Egypt; but Egypt was a powerful and thickly settled kingdom. To the nomadic Philistines Egypt would give neither contentment nor food. Moreover, it is the opinion of able

writers, that the Philistines were the Hyksos of Egyptian history, whom Thothmes had expelled scarcely 2 centuries before, and the remembrance and hatred of whose tyranny had not yet died away in Egypt. But beyond, in Cyrenica, and Numidia, and Mauritania, a fertile soil, a climate like their own, a location by the sea, and, above all, a country precisely adapted by its mountains and plains for nomadic life, invited them. To this day, they have preserved the same nomadic habits which characterized the ancient Philistines. They inhabit the back country, in the northern and western valleys and slopes of the Atlas, while the mongrel descendants of a dozen nations crowd the coast. On the southern slopes of the Atlas live an equally distinct tribe, known as the Shel-loohs. The Shel-loohs consider themselves as the aboriginal inhabitants, and say that the Berbers are interlopers, who emigrated from the east. The Berbers occupy thus precisely the topographical attitude they should occupy as immigrants, who would naturally follow the shore, and drive back the original occupants of the territory, around and beyond the mountains, where the Shel-loohs now are. The Berbers and Shel-loohs are constant marauders upon each other, and date this hostility back to an early time. The only argument against this account of the origin of the Berbers is found in philology. The Berber language seems to resemble the Shel-looh, and neither of them appears to have any Semitic affinities, whereas the Philistines were a Semitic branch. In accordance with this philological phenomenon, Messrs. Nott and Gliddon, in the "Indigenous Races," set down the Shel-loohs and Berbers as Hamitic and cognate. But in all mental and physical peculiarities, they do not present affinities that would justify the blending of their national origin. The Shel-loohs are of frail structure, dark complexion, easily civilized, humane, and peaceable; the Berbers are robust, of light color, stubbornly savage, cruel, and warlike. In every outward respect, they are as antipodal as the Berbers and Arabs. In whichever direction the truth may lie, the Berbers are an interesting race. Rude, warlike, and nomadic, they have come down almost unchanged through more than half the course of human history.

BERBICE, a district of the colony of British Guiana, settled by the Dutch in 1626, between lat. 6° and 7° N., and long. 57° and 58° W. It was 8 times captured by the British, on the last occasion in 1803, in whose hands it has since remained. In 1881, Demerara, Essequibo, and Berbice were consolidated into British Guiana. The capital of Berbice was New Amsterdam. It stands on the E. bank of the Berbice river, which flows into the Atlantic, and is navigable for 165 miles from the sea for vessels drawing 7 feet of water. Vessels of 300 tons can only sail as far as Fort Nassau, 50 miles from the river's mouth. On this river, Sir R. Schomburgk first saw, in 1837, the gigantic water-lily, called *Victoria regia*. The last

census of Berbice was in 1851; pop. 27,008, of whom 19,631 were natives, 4,547 African immigrants, 820 whites. Since the emancipation of the slaves, many negroes have become free proprietors. The principal products are rice, cotton, sugar, rum, vanilla, maize, balsam, and timber. The land is flat, exceedingly woody, and only cultivated near the river. The climate is deadly for European constitutions. In 1844, the total value of exports was £226,218, of which £222,859 went to Great Britain. Total imports, later statistics, £65,640. In the same year 86 vessels, about 12,000 tons burden, entered, and 72 vessels with nearly the same tonnage cleared. The registered shipping was 18 vessels with a burden of 854 tons. The later statistics of this district are included in those of British Guiana.

BERBIGUIER, CHARLES ALEXANDRE VINCENT, a French student of demonology, born at Carpentras, department of Vaucluse, 1776, died Dec. 8, 1851, of a sickly constitution, attributed "the ills which flesh is heir to," as well as the troubles inflicted upon him personally, by a lawsuit, and the injudicious treatment of the physician to whom he submitted his case, all to evil spirits, sent by the prince of demons to assail his Christian virtues. This conviction became so fixed in his mind that he went through a thorough course of studies in demonology, which brought him to the conclusion that the evil spirits in question belonged to the family of fairies. He published a work in support of his conclusion, *Les Puffadots, ou tous les démons ne sont pas de l'autre monde*, illustrated with plates (Paris, 1821, 8 vols. 8vo). The author ruined himself in this expensive publication, and died in a mad-house.

BERCHET, GIOVANNI, an Italian poet and prose writer, born at Milan, about the year 1790, was a friend of Manzoni and Silvio Pellico. In 1826 he became a frequent contributor to a liberal journal at Milan, called the *Conciliatore*. When this journal was finally suppressed and its contributors cast into prison or exiled by the Austrian government, Berchet settled in Geneva. A collection of his patriotic poems was published in a small volume at Paris, in 1841.

BERCHET, PIERRE, a historical painter, born in France, 1659, died in London, 1720. He went to England in 1681, and was sent by William III. to decorate a palace at Loo, in Holland. He afterward painted the ceiling of Trinity college, Oxford, and the staircase at the duke of Schomberg's in Pall-Mall, and the summer house at Ranelagh.

BERCHTESGADEN, a district in the circle of Upper Bavaria; pop. 9,200. It is an Alpine county, with Swiss-like scenery. The Watzmann and the Höhe Göhl are the highest peaks. Its main industrial feature is the production of salt. In the royal mines 300 miners are employed, and the annual produce is 16,000 cwt. of rock salt. This district and its chief town of the same name are also famous for their manufactures of wood, bone, and ivory work.

BERCHTOLD, LEOPOLD, Count, a German philanthropist and traveller, born in Moravia, 1738, died in 1809. He acquired 8 different languages, and traversed Europe, Asia, and Africa, in order to gain knowledge which should enable him to diminish the sum of human misery. He studied in Turkey the means of warding off and curing the plague; he propagated vaccination in countries where the practice had not yet been introduced. At his own cost, he erected and endowed various charitable institutions at Prague and Brunn, and saved the people of Riesengebirge in 1805 from famine by collecting contributions for their aid, and importing corn from abroad for their free use. After the battle of Wagram, Count Berchtold threw open his chateau for the use of the sick and the wounded. He was cut off by a fever incurred in the wards of this temporary hospital.

BERDIANSK, a city in the government of Taurida, in European Russia, on the sea of Azof, at the mouth of the river Berdianska; pop. 6,000. Its port is one of the best in that sea, and is of special value for the commerce of the city of Kertsch, and for the exports of grain from the Nogai-Tartars. This is principally in wheat, linseed, rape seed, hemp, butter, hides, and wool. In the vicinity of Berdiansk there are coal mines and salt lakes.

BERDITCHEV, or BERNYKHU, a city in the government of Volhynia in European Russia; ill built, with several churches and cloisters, and 20,000 population, mostly Polish Jews. It is celebrated in that region for its fair held for 4 weeks from the 15th of August, to which almost all the nobles and seigneurs gather with their families, often encamping in the open field. The traffic at this fair amounts sometimes to \$4,000,000. The nobles also take this opportunity to transact their own private affairs, such as lending, but above all borrowing money from the Jews, paying rents and interest, selling and buying landed estates, or renting them, hiring overseers and other servants. Such fairs and gatherings in Polish, or Russo-Polish towns, are the harvest seasons of the Jews, who, as bankers, brokers, go-betweens, advisers, confidential men, surround the Polish nobles, peasants, and hirelings of whatever kind, and, in fact, direct their actions.

BERENDS, JULIUS, a Prussian democrat, born in Kyritz, April 30, 1817; studied theology, but a radical sermon of his, printed in 1844, lost him the license to preach, or to teach school. He then set up as a printer at Berlin. In 1848 he was elected to the Prussian constituent assembly, and held an influential political position through the subsequent events, till the reestablishment of the old order of things caused him to return to private life.

BERENGARIUS (BERENGAR), an ecclesiastic who played a conspicuous part in the 11th century, as an opponent of the doctrine of transubstantiation, supposed to have been born at Tours, in 998, and to have died there in 1088. It is cer-

tain that he resided there during the greater part of his life, and held a canonry in the church of St. Martin, though he was at the same time archdeacon of Angers. His contemporaries, Guilmund and Berthold, describe him as a man of shallow intellect and little erudition, whose chief dialectic weapons were the use of terms in a novel signification, and the employment of opprobrious epithets. It is difficult to discover precisely what was his doctrine of the eucharist, although it is certain that he denied transubstantiation. He commenced his attack on this dogma in 1045, and was supported at first by several bishops, the chief of whom were Bishop Bruno of Angers, and Bishop Frollant of Senlis, as well as by a still larger number of the inferior clergy and students. It seems also that Philip the Fair, king of France, countenanced him for a time, from political reasons, as the learned Gfrörer labors to prove. These bishops abandoned him, however, at a later period, and all political countenance was withdrawn from him, so that he failed in establishing a numerous and permanent party. The opinion of Berengarius, together with that of John Scotus Erigena, whom he professed to follow, was first condemned by a council at Rome. A public dispute which he held with 2 monks of Bec, before William of Normandy, ended also in an unfavorable manner for him. Soon after (1050), 2 synods were held, the first at Vercelli, the second at Paris, to both of which he was invited, and where, on his failing to appear, his doctrine was condemned. In 1054, a synod was held at Tours, by the papal legate, Hildebrand (afterward Gregory VII.), where Berengarius retracted his doctrine, and signed the formula of faith presented to him, without any attempt to defend himself. As he continued, however, to teach and propagate his doctrine, it was condemned again by Victor II., in 1055, by Nicholas II., and a synod of 118 bishops at Rome, in 1059, where Berengarius made a new retraction, by the French synods of Angers, Rouen, St. Maixent, and Poitiers, between 1062 and 1076; by 2 synods at Rome in 1078 and 1079, and finally by the synod of Bordeaux in 1080. At these last 3 synods, Berengarius renewed his recantation in the most precise language, but after each one, except the last, continued to teach his doctrine as before. After the last recantation, he certainly abstained from attacking the doctrine of the Roman church, and he is said to have died in her faith and communion, as related by William of Malmesbury. The remains of his works are to be found in the collections of D'Achery and Martenne, and in a more recent publication by Vischer (Berlin, 1884).

BERENICE. I. A city of Egypt, on the Red sea, whence a road, 258 miles in length, extended across the desert to Coptos, on the Nile. This road was constructed in the reign of the second Ptolemy. Berenice was one of the principal centres by which the trade of Egypt, under the Macedonian dynasty, and that of the Romans

subsequently, were carried on with the remote East. During the Roman period, a sum equal to \$2,000,000 is said to have been annually remitted to the East by the Roman merchants as payment for its precious products, which sold at Rome for a hundred-fold more than their original price. Nothing now remains of Berenice but a heap of ruins, adjoining the modern port of Habest. II. **ΒΕΡΕΝΙΧ**, or Hesperia, a city of Cyrenaica, near which the ancients imagined the gardens of the Hesperides to be situated. A filthy, wretched village, named Bengazi, now occupies a portion of its site.

BERENICE, the name of several Egyptian and Syrian queens. I. A daughter of Lagus by Antigone, was originally the wife of Philip, an obscure Macedonian, but going to Egypt in the train of Eurydice, the bride of Ptolemy Soter, that monarch became enamored of her, and ultimately married her. Berenice was the mother of Ptolemy Philadelphus, and possessed such a hold on her husband's affections, that she prevailed on him to leave the kingdom to her own son, rather than to his issue by Eurydice. She had the reputation of being the wisest and most virtuous of the queens of Ptolemy. After her death, Ptolemy Philadelphus decreed her divine honors, and the poet Theocritus sang of her beauty, her goodness, and her apotheosis. II. A daughter of Ptolemy Philadelphus, married to Antiochus Theos, king of Syria. By his treaty with Philadelphus, 249 B. C., Antiochus was bound to put away Laodice, and to espouse in her stead the Egyptian princess. That monarch very reluctantly fulfilled this condition; but the moment he heard of the death of Philadelphus, he hastened to repudiate Berenice and to restore to her rights her injured rival. The indignant Laodice was not, however, appeased by this act of justice, and soon after caused Antiochus to be poisoned. Berenice now fled to Daphne with her infant son; but the partisans of Laodice pursued her thither, and having taken the city, murdered herself, her child, and all her Egyptian attendants. III. Daughter of Magas, king of Cyrene, betrothed to Ptolemy Euergetes. Magas died, however, before the nuptial ceremonies could take place, and his queen Arsinoë, who was averse to the marriage, offered her daughter and her kingdom to Demetrius, son of Demetrius Poliorcetes. Demetrius immediately accepted the offer, and embarked for Cyrene, but no sooner did he arrive than Arsinoë and himself became mutually enamored of each other. This so enraged Berenice that she appealed to the people, a party of whom rushed into the palace and murdered Demetrius in the very arms of the queen. After the consummation of this tragedy, Berenice proceeded to Egypt and became the spouse of Euergetes. When that monarch was setting out on his Syrian expedition, she cut off her ebony tresses, and dedicated them in the temple of the Zephyrian Venus for her husband's safe return. Before long, the hair mysteriously disappeared, whereon a court-

ly Samian exclaimed, that it had been translated to the skies, and metamorphosed into a constellation. This idea was taken up by some courtly astronomer of the age, who, in compliment to the queen, gave the name of *Coma Berenices* to the cluster of stars at the tail of the Lion. Berenice was assassinated in 221 B. C., by order of her son, Ptolemy Philopator. IV. Daughter of Ptolemy Lathyrus, ascended the throne of Egypt on the death of her father. She married Alexander II., the grandson of Ptolemy Physcon, whom the dictator Sylla had nominated king, but 19 days after her marriage she was murdered by her cruel husband, whom the indignant people almost immediately sacrificed. V. Daughter of Ptolemy Auletes, and eldest sister of the celebrated Cleopatra, was proclaimed queen by the Alexandrians after the expulsion of her father, 53 B. C. Her first husband was Seleucus Cybiosactes, brother of Antiochus Asiaticus, king of Syria; but his avarice and meanness so disgusted Berenice that she had him killed, and espoused Archelans, king of Comana in Cappadocia. In 6 months, however, Auletes was restored to his throne by the Romans, and Berenice and her consort were slain in battle. VI. Daughter of Costobarnus and Salome, sister of Herod the Great, was espoused to her cousin, Aristobulus, who, not treating his wife with sufficient deference, was put to death in the year 6 B. C. Berenice was next married to Theudion, maternal uncle to Antipater, the eldest son of Herod. She appears to have been again a widow when she went with her mother to Rome, where she died. VII. The eldest daughter of Agrippa I., married to her uncle, Herod, king of Chalcis, by whom she became the mother of 2 sons. After the death of Herod, A. D. 48, she repaired to the court of her brother, Agrippa II., and became his mistress. Next she was married to Polemon, king of Cilicia, but soon abandoned him and returned to Agrippa. In A. D. 62, she was with her brother at Casarea, when the apostle Paul pleaded his cause before him. In A. D. 65, while at Jerusalem, in fulfilment of a vow, she hazarded her life by interceding with the sanguinary Florus, for her oppressed countrymen, the Jews. At a subsequent period, she labored to dissuade her nation from that great rebellion which was attended with such calamitous results; but finding her efforts vain, she went over to the Romans with Agrippa, and thus escaped the ruin in which the rebels were involved. The most illustrious of the Romans were not proof against her arts and attractions. Her munificence gained her the friendship of Vespasian: her beauty and fascinating manners won the heart of Titus. Nor was the affection of the latter for Berenice a passing feeling. After the destruction of Jerusalem, she accompanied the conqueror to Rome, where his connection with her continued until the murmurs of the Romans compelled him to dismiss her. She then returned to Judæa, where she died.

BERESFORD, JAMES, an English author, born at Upham, in Hampshire, 1764, died Sept. 1840. He was educated at the charter-house and at Merton college, Oxford. Having received holy orders, he was appointed to the valuable rectory of Kibworth, Leicestershire. He wrote several separate works on various subjects, beside some excellent papers in the "Looker-on," a periodical of considerable interest, published in 1792-'3. The work which obtained for him great and permanent celebrity was the well-known humorous 'prose satire, "The Miseries of Human Life," in 2 vols. This has been repeatedly reprinted; it has even been dramatized, and numerous imitations of it have appeared.

BERESFORD, JAMES, late surgeon to the British forces, born in the island of Barbados, Jan. 8, 1788, died at Hartford, Conn., March 4, 1848. His family was one of the highest respectability in the island, and an English branch of the Irish house of that name. Dr. Beresford received his medical and surgical education in London, under Sir Astley Cooper, and in 1804, soon after receiving his diploma, entered the medical service of the British army, in which he passed through the various grades of professional rank to that of staff surgeon, which he received in 1815. His whole term of service was one of constant and arduous duty, and he was in every engagement in the West Indies which took place during that period; he was wounded at the last capture of Guadeloupe, while in discharge of his professional duties to his corps, the royal York rangers. In 1817, at his own earnest request, he was put on the half-pay list, and immediately entered on an extensive private practice in Barbice, S. America. Here he remained at the head of his profession till 1833, when, resigning all connection with the army, he removed to the United States, and settled in Hartford, where his eminent abilities soon gave him a large and valuable practice, to which his fine social qualities greatly contributed. Though maintaining the first rank in his profession, Dr. Beresford's life was too fully occupied to afford leisure for recording the results of his large experience.

BERESFORD, WILLIAM CARR, viscount, British general, born in Ireland, Oct. 2, 1768, died in Kent, Jan. 8, 1854. The illegitimate son of George, 1st marquis of Waterford, he entered the army at the age of 16, and served in Nova Scotia until 1790. During this period, he lost one of his eyes from an accidental shot by a brother officer. He served at Toulon, Corsica, the West Indies (under Abercromby), the East Indies, and Egypt, under Baird. On his return, in 1800, he was made colonel by brevet. He subsequently was employed in Ireland, at the conquest of the Cape of Good Hope, and (as brigadier-general) against Buenos Ayres, in 1806, where he was compelled to surrender, but finally escaped. In 1807 he commanded the forces which captured Madeira, and was

made governor of that island. In 1808 he became major-general, and, having arrived in Portugal with the English forces, was intrusted with the whole organization of the Portuguese army, including the militia. He was one of the commissioners for adjusting the terms of the celebrated convention of Cintra; was present during the retreat on, and battle of Corunna, where he covered the embarkation of Sir John Moore's troops; and, in March, 1809, was appointed marshal and generalissimo of the Portuguese army, soon raised by him into an excellent force, whether of attack or defence. He fought all through the Peninsular war, until its close in 1814, vigorously supporting Wellington. On the only considerable occasion, however, when he held the chief command, at the battle of Albuera, in 1811, he displayed very poor generalship, and the day would have been lost but for the act of a subaltern in disobedience of his orders. He took part in the victories of Salamanca, Vittoria, Bayonne, Orthez, and Toulouse. For these services he was created a field-marshal of Portugal, duke of Elvas, and marquis of Santo Campo. In 1810 he was chosen member of parliament for the county of Waterford (he never took his seat), and, in 1814, was created Baron Beresford of Albuera and Dungannon; in 1828 he was advanced to the dignity of viscount. In 1814 he went on a diplomatic mission to Brazil, where, in 1817, he repressed a conspiracy. On his return, he successively became lieutenant-general of the ordnance, general of the army, and (from 1828 to 1880) master-general of the ordnance. Having assisted Don Miguel, in 1828, he was deprived of his baton as field-marshal of Portugal. In politics, he was actively, though silently, a decided tory. His military efficiency chiefly consisted in his successful reorganization of the Portuguese troops, whom, by great skill and unwearied exertions, he finally rendered sufficiently firm and well disciplined to cope even with the French. In 1833 he married his cousin, Louisa, daughter of the archbishop of Tuam, and widow of Thomas Hope, the millionaire banker, and author of "Anastasius." He left no children, and the title became extinct at his death.

BERESINA, or **BEREZINA**, a river of Russian Poland, famous for a battle fought on its banks, and for the disastrous retreat of the grand army of Napoleon I., after the burning of Moscow. The Beresina has its sources in several small lakes, a little to the north of the town of Dockszyce, in lat. 55° 10' N., long. 27° 20' E. It has a course of about 280 miles, in a direct line, without allowance for the sinuosities of the current, which are very great and continuous, owing to the level nature of the country through which it flows, principally due southward, with an inclination to the eastward in its lower waters, which fall by 2 months into the Dnieper at Rezhitz. For the first hundred miles of its course, until it reaches a

village of its own name, a short distance below the town of Borissov, it flows through open morasses and swampy meadows; below that place its banks, still deep and miry, are encumbered with forests. In its upward march the army did not come upon this river; for, having entered the Russian territory by the passage of the Niemen at the town of Kovno, situated at the junction of the Vilna with that river, June 24, 1812, numbering 200,000 men, including 40,000 horse, of whom 12,000 were cuirassiers, it marched direct on Vilna; which was evacuated by the Russians and occupied by Napoleon on June 28. The object of this march was to fall directly on the great intrenched camp of the Russians, centrally situated at Drissa, on the confluence of a stream of the same name with the Dwina, which lies N. E. of Vilna, at a distance of about 150 miles, the route between the two places running to the northward of the sources of the Beresina. The Russians, however, having fallen back, in accordance with a preconceived plan, upon Vitepsk, in the line of their retreat to Moscow, of which movement Napoleon was informed at Gloubokoje, directly north and about 80 miles distant from the head-waters of the Beresina, the French army marched, in pursuit of the enemy, due west upon Vitepsk, thus turning the river, which they were destined to cross a few months later under such altered circumstances, and leaving its waters entirely to the right of their advance. On Sept. 5 was fought the desperate battle of Borodino, at the close of which the French had not enough ammunition on hand to fight another general battle; on the 14th of that month, Napoleon entered Moscow, in triumph, only to see the greater part of the city reduced to ashes, by the fires kindled by the hands of the Russians themselves, between the 15th and 19th, when the act of self-devotion was complete, and the army of the invader already doomed to destruction. On the morning of Oct. 19, exactly one month after the voluntary destruction of the capital of old Russia, and 6 days after the first fall of snow—which, it may be well to observe here, was not extraordinarily early, any more than it was the true cause of the French retreat, as orders had already been issued, and partially acted upon, for the retreat of the hospitals, magazines, and parks of artillery, previous to the appearance of the first snow-flake—Napoleon evacuated Moscow, and the most disastrous retreat which all history has recorded was begun by the great captain, "who, then for the first time in his life, retired in the open field from an enemy." Strategetical reasons of sufficient weight compelled Napoleon to retreat on Smolensk, by the wasted and ruined line of Mohaisk, instead of by that of Kalooza and Medynsk, which, not having suffered by the transit of the contending armies, would have afforded partial supplies for his troops, which were from this moment utterly destitute of magazines and portable supplies. The end of

the Russians, in their unusual tactics and long retreat on Moscow, as well as in the wonderful act of patriotism which destroyed that famous city, now appeared to be fully gained. While the French were in rapid and disorderly retreat, famishing with hunger, perishing with cold, and unable to snatch a moment's precarious sleep among the whelming snow-drifts, without the certainty of being aroused by the wild yell and the avenging lances of the close-pursuing Cossacks, from every quarter of the empire, from the very opposite extremities of Europe, the Russian armies were closing in to the front, in order to intercept what was now almost a hopeless and despairing flight of a disorganized host—and would have been so altogether, but for the steady resolution with which the veterans of a hundred victories stood to their arms, and resumed both the semblance and the spirit of an army, whenever the Russian trumpets announced an attack on their decimated columns. Already it was predicted in the capitals of his enemies—and that was in every capital of Europe, unless it were that of little Saxony—that the great conqueror's career of conquest was already run, and that no choice was left to him, but that of a grave or a prison, for himself and for the remnant of his innumerable armies, in the sacred soil of Russia. But, in spite of all, the extraordinary genius of the man, the zeal and devotion with which he knew how to inspire his lieutenants, and the indomitable courage of his veterans, carried him through; and he was enabled to burst asunder the toils, and escape. Still, when the army arrived at Orsha, whence Napoleon had, at first, determined to force his way across the Oula in a direct line on Vilna, his position appeared indeed hopeless. At this juncture, just when he had discovered the formidable obstacles that would oppose him on the route to Vilna, which led through almost impenetrable swamps and forests, and had taken the direct road on the Beresina by Borissov, he received information that he was, in fact, all but surrounded. Minak, on the line of his intended march, from Borissov eastward, was taken; the bridge of Borissov seized, and the course of the Beresina defended in his front by Tchichagoff with 80,000 men; Wittgenstein was in an impregnable position on his right; and, on his left, Kutusoff, with the main Russian army. To oppose this concentration of forces, all that Napoleon could collect was not above 40,000 actual combatants, although, nominally, after his junction with Victor's, Oudinot's, and Dombrowsky's corps, he numbered 70,000 men, with a powerful artillery of 150 guns. On the morning of Nov. 28, the advanced guard of Tchichagoff, having crossed the bridge of Borissov, in order to open his communications with Wittgenstein, was encountered by Oudinot's vanguard; defeated with loss, and driven back across the bridge, which, however, it had the presence of mind to destroy; and, the river being filled with

masses of floating ice, it seemed, at least, questionable how Napoleon could hope to make his way across its flooded and encumbered waters. On the following morning the whole force of the grand army was drawn up on the heights of Borissov, determined to effect their passage at that point; but so skilfully did Napoleon contrive to mask his intentions, and to lead the enemy to believe that his real operations were directed on the lower Beresina, that Tchichagoff remained inactive, and Tchaplitz, who commanded on the western bank of the river, exactly in the teeth of the vanguard as they should cross over, was ordered down to resist the false attack on the lower part of the river. In the mean time, the western bank being thus cleared for a while, the French sappers rushed into the river shoulder deep to establish the bridges; Corbineau, with his cavalry, swam across the stream, and drove back the Russian detachments which were collecting on the further side; and before Tchaplitz returned from his fruitless excursion, the French vanguard was so firmly established on the left bank of the river, that there was no longer a hope to dislodge it. A second bridge was erected, and Oudinot's corps being pushed across with 50 pieces of artillery, drove back the Russians to the thickets at a distance from the river, and thus secured the important defiles leading to Zembin, and the line of the retreat of the army. Meanwhile, however, Tchichagoff, learning what was in progress, marched at once to the aid of Tchaplitz, and established a bridge of pontoons at Borissov, a little way above the French bridges at Studianka, by which he passed over, reinforced by Yermoloff with the van of Kutusoff's army, in order to assail the French advanced guard on the right bank of the river; while Wittgenstein, coming up in force, and having already cut off Partonneaux, with 7,000 men, and obliged him to lay down his arms, was preparing to attack Victor, who commanded the rear-guard on the left-hand bank, and to force him down headlong on the bridges and the river. On the night of Nov. 27, the Russian commanders all met, and concerted measures for a simultaneous attack on the following day, on both sides of the river. The morning of the 28th opened by a spirited Russian attack on Oudinot; but he had been reinforced by Ney's corps, by the imperial guard, and by a few squadrons of cuirassiers, who charged with such impetuosity, that they drove all before them, and, although the battle was reestablished, gained so much time that the retreat was made good, and the guards and Davoust's corps defiled off safely in the direction of Zembin, during the continuance of the action, which was maintained in the woods between Brill and Stackhow, with incredible fury, until midnight. It was, however, on Victor's devoted rear-guard, seriously jeopardized by the loss of Partonneaux's division, that fell the brunt of the storm. After a fearful struggle the Russian advanced artillery established a battery of 12 guns

on a spot which commanded the bridges; then an irretrievable confusion and hideous rout commenced, while, corps after corps, and battery after battery, the Russian forces advanced girdling in both combatants and fugitives with a circle of desolating fire, and thundering upon the bridges, crowded and choked with the helpless throngs, through whom the guns and caissons tore their way, like the car of Juggernaut, over masses of the dead and dying. At nightfall the artillery bridge broke down under the mingled effects of the pressure and the enemy's fire; and thousands were precipitated into the waves, and perished under the freezing waters, which in the following spring gave up their dead, to the number of 12,000 human corpses. In the mean time, just in the crisis of this agony, Victor's last corps forced its way up, and passing over and through the miserable relics, principally non-combatants, of the host, held the bridge firmly until the morning, when on the approach of the Russian troops it was set on fire as the last measure of defence. It is said that hundreds of the deserted wretches rushed over the burning timbers, and when the heat became too intense for endurance, plunged into the fearful river, where so many thousands of their comrades had already perished; and there found their graves, happier perhaps than the other miserable thousands, who, prisoners to the Muscovite, paid for their leader's ambition by the horrors of Siberian bondage. This was the last act of the grand but appalling drama of the Russian invasion. Out of above 500,000 men with 100,000 horses, and above 1,800 cannon, who had opened this terrific campaign, less than 50,000 combatants and non-combatants, scarcely preserving the semblance of an army, or the show of discipline, straggled, beyond the Beresina, in detached groups, along the road to Vilna. The price paid for the passage of those wretched survivors, was 12,000 dead, 16,000 prisoners, and 25 pieces of cannon; and yet, of those thus dearly rescued, but 20,000, not one-third of whom had seen the towers of the Kremlin, defiled across the bridge of Kovno, too glad to see the last of Russian territory.

BEREZOV, or **BEREZOVSK**, a village on a plateau, containing gold, in the government of Perm, Asiatic Russia, or Siberia, on the eastern side of the Ural mountains. Since 1754, gold has been dug here. The first Uralian gold washing was in 1814. Now the mines employ about 6,000 hands.

BEREZOV, or **BERESSEF**, a district in Asiatic Russia, in the government of Tobolsk. The population is composed of nomads, who use the reindeer, and of Ostiaks (a Finnic tribe), and Russians. The soil is frozen, and thaws in summer only about a foot deep.—A town of the same name, the capital of the district, is situated at the confluence of the rivers Soswa and Obi. It is the most northern place in western Siberia in which the horse can exist. Barley and rye are cultivated with success. Bere-

zov supplies Tobolsk with dried fish, and is the centre for the fur trade with the Ostiaks, the Voguls, and the Samoyeds. Three of the favorites of Peter the Great, banished by his successors, namely, Ostermann, Menchikoff, and Dolgoroukoff, ended their days there.

BERG, a portion of Rhenish Prussia, called also Cleve-Jülich Berg, containing the two districts of Cologne and Düsseldorf. In the time of the Romans Berg was populated by the Ubii. Under the Franks it was divided into 4 shires and belonged to the Ripuarii. Hermann, and his brother Adolf I., are the supposed progenitors of the counts of Berg. Eight Adolfs held the sovereign power in the duchy, until 1848, when it fell, through inheritance, into the hands of the counts of Jülich, who were promoted to the rank of dukes; but on the extinction of this family in 1609, Berg was tossed about from one German power to the other, until 1666, when it came into the possession of the Electoral Palatinate till 1801, and eventually, in 1806, became the property of Prussia. In 1808 Napoleon made a grand duchy of it, which he presented to Murat, who derived from it the title of grand duke of Berg, but exchanged it in 1808 for the kingdom of Naples, when Napoleon bestowed it upon the eldest son of his brother of Holland. However, before he reached his majority, Berg fell, in 1818, into the power of the allies, and in 1814, at the congress of Vienna, it was allotted to its present sovereign, the king of Prussia.

BERG, **FRIEDRICH VON**, count, Russian general of infantry, chief adjutant of the czar, and governor-general of Finland, born in Dorpat, May 27, 1790, sprung from one of the historical families of Livonia. He studied at the university of his native town, and entered the army in 1812, and at the end of the campaign in 1814, was captain in the general's staff of the guard. He now passed several years in Switzerland, Italy, Greece, and Turkey; and his travels, published on his return to St. Petersburg in 1819, attracted the attention of Alexander, who promoted him to the rank of colonel. In the following year he entered the diplomatic service, at the suggestion of Count Capo d'Istria, who then was secretary of foreign affairs, and passed some time at Munich and at Naples. In 1822 he was intrusted with the regulation of the affairs of the government of Orenburg and of its nomad tribes, and after 3 years of negotiation and warfare he succeeded in reconciling the refractory Cossacks of the Kirgheez steppes to the Russian administrative system. In Dec. 1824, he was engaged in a cruise against the pirates along the Asiatic shores of the Caspian sea, and his services were recognized by the emperor Nicholas, who promoted him to the rank of major-general. In 1826 he officiated as secretary to the Russian embassy at Constantinople until the outbreak of the war with Turkey, when he joined the army, and served in the campaigns of 1828 and 1829, under Wittgenstein and Diebitch, as quartermaster-general,

and took part in the Polish war of 1830; after which he remained for 12 years at Warsaw as lieutenant-general, occasionally employed on diplomatic missions to Berlin and Vienna. In 1843 he was appointed general of infantry and quartermaster-general of the entire Russian army, and removed to St. Petersburg, where he occupied, at the same time, the post of chief adjutant of the czar, and continued to act from time to time as diplomatist in Germany. After the outbreak of the revolutions of 1848 and 1849, he was sent on a mission to Austria, and when the eastern war broke out he was put in command of Revel and Esthonia, and subsequently of Finland. In 1849 the title of count was conferred upon him by the emperor Francis Joseph of Austria, and on Sept. 3, 1856, he was made a Russian count by Alexander II.

BERG, JENS CHRISTIAN, a Norwegian judge and statesman, born Sept. 28, 1775, whose name is connected with the principal events in Norway for almost the last century, and who took a conspicuous part, in 1816-'17, in the separation of Norway from Denmark. He was a member of the Norwegian bank administration in 1835, and delegate from the city of Christiania in 1837. He also distinguished himself in the sphere of Norwegian archaeology by his contributions on the subject to the Norwegian press.

BERGAMA, a town of Asiatic Turkey, 50 or 60 miles N. N. E. of Smyrna, and famous for the ruins of the ancient city of Pergamus, on the site of which the modern town is built. The remains of several temples, of a prytaneum, gymnasium, amphitheatre, and other public buildings, bear witness to the magnificence of the ancient city. Many of the buildings of the town are constructed on the sites of ancient edifices, and one of the mosques was, probably, in former times, a Christian church. In the graveyard, also, are many interesting memorials of antiquity. Pop. about 10,000.

BERGAMI, BARTOLOMEO. The celebrated trial of Queen Caroline, wife of George IV. of England, was principally founded upon a charge of adulterous intercourse with Bergami, who, in 1814, upon recommendation of the marquis Ghislieri, in whose and Gen. Pino's previous employment he had been, was attached to her household as courier, and subsequently promoted in Italy to the rank of baron, chamberlain, and master of the horse. Bergami, who had fought his way up in the Italian army from a common soldier to the rank of quarter-master, belonged to a respectable family, and the marquis Ghislieri described him to the queen as a person of character and attainments superior to his condition, and bespoke for him a kind treatment. This, and the personal advantages of Bergami, who was singularly good-looking, combining athletic strength and stature with almost feminine beauty, naturally disposed the queen in his favor. Moreover, he was full of loyalty and devotion, and on one occasion nearly

became the victim of poison which was intended for her. The queen not only showered favor after favor upon him, but also treated his whole family, especially a little child of his, with the greatest generosity and kindness. All these circumstances were used by her enemies as so many indications of her criminality, and during the trial one of the Italian witnesses, Teodore Majocchi, excited special indignation by his admitting every fact unfavorable to the queen, and by answering every question which might tell in her favor with *Non mi ricordo*. Bergami, who was at Pesaro during the trial, exclaimed, when he was apprised of her acquittal, but at the same time of her death, that she had been poisoned, and never could be convinced to the contrary. To the last he ever spoke of the queen with the greatest reverence and affection, and his deportment before and after her death led to the conclusion that he looked upon her rather as a benefactress than a mistress. However, wherever he went he became the observed of all observers. During his occasional excursions to Paris his apartments were crowded with visitors, consisting principally of ladies, who, under the pretext of having been friends of Queen Caroline, gratified their curiosity and obtained an interview with the portly courier. When at home he lived in great splendor; in the capitals of Italy, Rome, Naples, Milan, he was a lion, and the houses of "the best families" were open to him. The only persons who were the losers by the death of the queen were his servants, many of whom had been employed by that lady, who was always kind and considerate to all, while Bergami lived with a person of obscure birth, who was formerly a servant-girl, who had the superintendence of his house, and tyrannized over those below her as much as she could. At the time of the trial many different statements about Bergami's character were circulated in the house of lords, but however contradictory in many other respects, they all agreed in this one fact, that he was as inoffensive as he was good-looking a person, who probably would never have been heard of beyond the precincts of Italian barracks if it had not been for his relation with Queen Caroline, and for the peculiar construction which was put upon it by her enemies at the trial. His name in England was, by a curious mistake, spelt with a P.

BERGAMO, a province of the Austrian kingdom of Lombardy, pop. 340,000, bounded N. by the delegation of Valtelino, E. by those of Tyrol and Brescia, S. by Cremona, Lodi, and Crema, and W. by Milan and Como. It is divided into 18 districts, and these into 372 communes or parishes, contains 1 city, 22 market-towns, and 333 villages. The north, lying on the southern slope of the Rhaetian Alps, is very mountainous, and covered with wood, but in the south are rich meadow lands. The rearing of silk-worms is the principal branch of industry, but there are also woollen

manufactures. The Bergamasks speak the worst dialect of Italy, and are notorious for their cunning and the drollery of their manners.—The capital of this province, also named Bergamo, population 38,000, is built in the form of an amphitheatre, on the side of a rocky hill, with fortifications constructed by the most eminent architects of the 16th century, 15 churches, 12 monasteries, 10 nunneries, 4 hospitals, 6 orphan-houses, a lyceum, a school of painting and architecture, a musical academy, which produced Donizetti, and a seminary with a library of about 50,000 volumes. Its most remarkable building is the *Fiera*, containing 600 booths, in which a great annual fair is held in August, the value of the goods disposed of sometimes exceeding \$5,000,000, $\frac{1}{4}$ of which consists of silks. The public square is adorned with a statue of Torquato Tasso, whose father, Bernardo, was a native of the town. Bergamo was known to the Romans, and was taken successively by Attila, the Lombards, and Charlemagne. In the 12th century, it suffered much from the quarrels between the Guelphs and Ghibellines, and it fell under the dominion of Venice in 1428. In 1509 it was conquered by Louis XII. of France, but retaken by the Venetians, in whose possession it remained until 1796, when it passed into the hands of the French. In 1814 it was incorporated into the Lombard-Venetian kingdom, under the sway of Austria, under which it reluctantly remains.

BERGAMOT, a kind of green-colored citron or small orange, of fine flavor and taste, of round form; the fruit of the *citrus margaritta* (*limetta* of Riiso and De Candolle). The rind furnishes by distillation an essence or oil which is much used in perfumery, and to some extent in medicine. The bergamot tree is a native of the south of Europe, and is particularly abundant in the neighborhood of Nice. To obtain $2\frac{1}{2}$ ounces of oil, 100 bergamots are consumed. This oil or essence has a very agreeable, sweetish odor, and a bitter, aromatic taste. Its specific gravity is 0.885. In composition, it is not to be distinguished from oil of lemons. Alcohol is used to adulterate it, and is not readily detected when added only to the extent of 8 per cent.—Also the name of a variety of pears, which, like the citron-tree of the same name, is said to have originated in Bergamo, in Italy. There are at least 9 sub-varieties of the bergamot pear, all of which are highly esteemed.—The word is used again to designate a coarse quality of tapestry, supposed to have been invented at the same place in Italy already referred to.

BERGASSE, NICOLAS, a French lawyer, born in 1750, at Lyons, died May 28, 1832. He became conspicuous at Paris in the case of Kornmann against his wife, in which he had Beaumarchais among his opponents. His memorials in favor of his client had a success nearly equal to that won several years before by the witty dramatist in his struggle against La-

blache and Goezman; both mixed politics with their pleadings, and while thus courting public opinion, augmented that growing dissatisfaction with existing institutions which prepared the way for the revolution. In 1789 he was elected deputy to the states-general by the *tiers-état* of Lyons. He soon, however, became dissatisfied with the revolution, and retired to private life. He was arrested in 1794, but the 9th Thermidor saved him from the guillotine. He wrote on various political and philosophical subjects, but only his *Mémoires* against Beaumarchais are now remembered.

BERGEN, a north-eastern county of New Jersey, bordering on New York, and having an area of about 850 sq. miles. It is bounded on the E. by the Hudson river, on the W. bank of which, within the limits of this county, are the "palisades," a remarkable range of trap-rock rising perpendicularly from the river to a height of nearly 500 feet. It is intersected by Ramapo, Hackensack, and Saddle rivers, which afford valuable water power. The surface of the county is uneven, and in the western part mountainous. The soil, particularly near the rivers, is productive, and in 1850 yielded 150,709 bushels of corn, 57,686 of oats, 166,368 of potatoes, 16,582 tons of hay, and 328,759 pounds of butter. There were in operation during the same year, 1 manufactory of printed calicoes, 4 cotton, 1 woollen, 15 flour, 8 paper, and 15 saw-mills. The public schools contained 2,725 pupils. Limestone and magnetic iron ore are the chief minerals. The county was organized in 1710, and has since been much diminished by the formation of Passaic and Hudson counties. Pop. in 1855, 17,774. Capital, Hackensack.

BERGEN, or BERGEN'S-STIFT, a province and diocese in southern Norway, consisting of the *amter* or bailiwicks of *Nordre* and *Søndre* (north and south) *Bergenhuus*, and a part of the *amt* of *Romsdal*; pop. in 1855, S. *Bergenhuus*, 104,762; N. *Bergenhuus*, 81,496; total pop. of the province, 195,000.—The capital is Bergen, a fortified city and seaport; pop. in 1855, 25,797; built on a peninsula, at the head of a deep inlet, and has an excellent harbor; lat. 60° 24' N., long. 5° 18' E. The town forms an amphitheatre, and is surrounded by lofty hills on the land side; it has a cathedral, churches, hospitals, a theatre, museum, diocesan college, naval academy, charitable institutions, and 5 public libraries. It is the seat of a court of secondary jurisdiction, of one of the 8 treasuries of the kingdom, and of a branch of the Norwegian bank. The harbor is defended by several forts, and a naval squadron is usually stationed here. Bergen sends 4 representatives to the *storting* or legislature. The fisheries form the most important interest of the place, fleets of small vessels from the north bringing fish, blubber, roes, &c., in summer, to exchange for goods. Its exports are stock-fish, lobsters, herrings, cod-oil, horns, fish-roses, skins, iron, timber, and rock-moss. Bergen was founded in the 11th century, and for a long time was a

member of the Hanseatic league. It has lost much of the commercial importance which it enjoyed toward the close of the 16th century.

BERGEN-OP-ZOOM, a strongly fortified maritime town of the province of North Brabant, in Holland, situated on the river Zoom, near its confluence with the East Scheldt, 17 miles N. N. W. of Antwerp; pop. 7,000. The town is well built, with spacious squares, has a good harbor, 2 arsenals, earthenware manufactories, and some trade in anchovies. Its defences, deemed almost impregnable, are the *chef-d'œuvre* of the famous Coehorn, the rival of Vauban. It was besieged unsuccessfully by the prince of Parma, in 1588, and by the marquis of Spinola, in 1622. In 1747, the French, under Marshal Löwendal, took it by stratagem, and it was surrendered to Gen. Pichegru in 1795. Sir Thomas Graham attempted to carry it by a night attack, March 8, 1814, but was repulsed with the loss of two-thirds of his force.

BERGERAC, **SAVINIEN CYRANO DE**, a French writer and duellist, born in 1620, in Périgord, died at Paris, in 1655. He gained a brilliant reputation in his day, by his readiness to fight a duel, of which he passed safely through several hundred. A cough, a look, a tone of the voice, a gesture, was sufficient to superinduce a challenge from the pugnacious Bergerac. As his nose had been terribly hacked up in these *rencontres*, and as people could never refrain from smiling at sight of the battered and mangled feature, Bergerac was never at a loss for a quarrel. However, the sobering influence of years turned his energies into a new channel—that of philosophy, which he studied under Gassendi, in company with Molière, and wrote plays, from which later writers have drawn without acknowledgment.

BERGHAUS, **HEINRICH KARL WILHELM**, a German geographer, born at Cleves, May 8, 1797. He served as a volunteer in the war of liberation against the French, and entered France with the allies, which gave him the opportunity of making his first map, which was of France. In 1816 he became geographical engineer in the war department of the Prussian ministry. In 1824 he was appointed professor of mathematics to the Berlin academy of architecture; and in 1836, director of the royal school of geographical art in Potsdam. The first edition of his "Physical Atlas," in 90 maps, was published at Gotha, from 1838 to 1849; a second edition has since appeared. The 1st part depicts the meteorology and climatology of the world; the 2d, its hydrology and hydrography; the 3d, its geology; the 4th, its magnetic diversity; 5th, the geographical distribution of plants; 6th, the geographical distribution of animals; 7th, anthropology; 8th, ethnography. Prof. Johnston, of Edinburgh, has made this great work of Berghaus the basis of his "Physical Atlas." He brought out a German edition of George Catlin's original work, "North American Indian Portfolio," and an immense variety of geographical and

ethnographical works, of which we will enumerate only 2, the *Atlas von Asien*, in 18 maps, and the *Völker des Erdballs*.

BERGHEM, **NIKOLAAS**, a Dutch painter, born at Haarlem, in 1624, died Feb. 18, 1688. His father, Peter Klaas van Haarlem, a painter of still life, gave him his first instructions in the art, after which he studied under Van Goyen, Weenix, and other eminent masters, whose influence did not prevent him from forming a style of his own. His pictures are principally landscapes, with groups of figures and cattle, and are remarkable for effective composition, harmonious coloring, and admirable atmospheric effects, in which he was unsurpassed by any painter of his time, although the brothers Both, who employed similar subjects, were formidable rivals. He painted rapidly, but his pictures are beautifully finished, and command enormous prices at the present day. He also executed a number of admirable engravings and etchings with a nicety of finish unusual in a painter.

BERGHOLTZ, or **NEW BERGHOLTZ**, a village of Wheatland township, Niagara co., N. Y., about 15 miles N. of Buffalo. It was settled in 1848, by Lutheran emigrants from the Prussian town of the same name. Pop. about 2,000.

BERGIER, **NICOLAS SYLVESTRE**, a French priest and philosopher, born at Darnay, in Lorraine, Dec. 31, 1718, died in Paris, April 9, 1790. He was the author of numerous works, on a great variety of subjects, and filled various ecclesiastical offices. He began life as the curé of a little village of Franche-Comté, and was afterward made professor of theology, superior of the college of Besançon, and canon of the cathedral of Paris. He was member of the academy of inscriptions and belles-lettres, and an inveterate enemy of the encyclopédistes.

BERGMAN, **TORBERN OLOF**, a Swedish chemist and naturalist, born at Catharineberg, in West Gottland, March 9, 1735, died at Medevi, July 8, 1784. Intended by his father for the law or the church, he was sent to the university of Upsal. There he devoted himself with such ardor to the study, not only of the languages but especially of mathematics and natural history, that his health became disordered, and he was obliged to retire for several months from the university. He passed the interval in the study of botany and entomology, and was now permitted by his parents to pursue that scientific career which accorded with his tastes and which the fame of Linnæus rendered attractive. He sent to Linnæus several insects previously unknown in Sweden, and devised a new method for their classification founded upon the characteristics of the larvæ. His first paper, published in the memoirs of the academy of Stockholm, in 1756, narrated the important discovery that leeches are oviparous, and that the substance called *coccus aquaticus* was the ovum of a species of leech containing several of the young animals. Linnæus wrote upon the memoir as he gave it his sanction, *Vidi, et obstupui*. Berg-

man devoted himself from this time to almost every branch of science, producing original results in every department of his studies. He presented memoirs to the academy upon attraction, electricity, twilight, the rainbow, and the aurora borealis; became in 1761 adjunct professor of physics and mathematics, at Upsal, and was appointed in the same year one of the astronomers to observe the first transit of the planet Venus over the sun. In 1758, an association of savants was formed for the purpose of advancing a knowledge of the earth; to each of the members a particular portion of the subject was assigned, and Bergman received the department of physics. The report which he made after 8 years of study displayed a masterly knowledge of chemistry and mineralogy, and was rapidly sold and translated into foreign languages. When, in 1766, a vacancy occurred in the chemical chair of the university, by the resignation of Waller, he was, by the favor of Prince Gustavus III., appointed to that position, and he immediately silenced the murmurs of his opponents by publishing a curious and original memoir on the manufacture of alum. From this time he devoted himself wholly to the study of chemistry. Accustomed to the rigid method of geometry, he determined to banish from chemical science all preconceptions, and to proceed only by observation of facts. This purpose he expressed in his discourse on the search for truth, in which he distinguished the Cartesian or contemplative method from the Newtonian or experimental, and preferred the latter. His first step was to furnish his laboratory with abundant materials and utensils for experiment, and to arrange around it a vast mineralogical collection. He published in 1774 a paper "On the Aërial Acid," subsequently called carbonic acid, and he proved by a variety of experiments that it was a new and distinct acid. By boiling nitric acid with sugar, gum, and other vegetable substances, he produced oxalic acid. By a skilful employment of unusual reagents he succeeded in analyzing mineral waters, and he formed factitious mineral waters by a combination of their elements. In his researches on this topic he adopted the opinion that caloric is a fluid like electricity, and was the first discoverer of sulphuretted hydrogen, which he called the hepatic gas. He was the first to employ the humid method in the examination of minerals, and by combining it with the dry method he obtained a knowledge of the principal elements of the emerald, topaz, sapphire, and other precious stones. He was the first also to derive important results in chemistry from the use of the blow-pipe. All of his labors led him to a chemical classification of the minerals, according to which the genera were determined by the principal integrant elements, the species by the different degrees in which they were combined, and the varieties by the external form. Applying geometry to the forms of crystals, he laid the foundation for the theory of crystallization afterward develop-

ed by Haüy. He demonstrated that the superiority of certain kinds of steel was due to the presence of manganese, and that the brittleness of steel in extreme cold was caused by siderite, a substance which he thought a new metal, although it has since been recognized as the phosphuret of iron. The theory of affinities, proposed by Geoffroy, in 1718, had been the first step toward giving a philosophical foundation to the science of chemistry. Bergman seizing upon this idea, made it almost his own by an immense number of new experiments, and presented chemical phenomena as only modifications of the great law which rules the universe. To the curious operations of the elements when placed in juxtaposition—2 united elements being separated by the approach of a 3d with which one of them combines, and 2 compounds as they meet each other inter-exchanging some of their elements and thus forming 2 new compounds—to these elementary movements, as if by power of instinct or of choice, he assigned the name elective, and introduced the term, which has since passed from chemistry into sentimental literature, of elective affinities. His mathematical training is seen in the simple formulas by which he described chemical operations. He adopted the erroneous though ingenious ideas of Scheele concerning phlogiston, and in general his discoveries of facts were of much more value than his theoretical explanations. His labors distinguished him throughout Europe; he corresponded with the principal contemporary chemists and physical philosophers, was a member of numerous learned societies, and received from the king of Sweden the order of Wasa. He remained at Upsal, though invited to Berlin by Frederic the Great, till the state of his health broken by his immense labors obliged him to repair to the mineral springs where he died.

BERGUES (Fr. *Bergues-St.-Winoc*), a strongly fortified town of France, department of Nord, 5 miles S. S. E. of Dunkirk, pop. 5,668. The surrounding country, which is low, can be inundated at pleasure, by means of works provided for the purpose. The most remarkable object in the town is an old tower, 160 feet high, probably of Spanish origin. Bergues is connected with the sea, at Dunkirk, by a canal navigable for vessels of 250 tons burden.

BERHAMPOOR, a town of Hindostan, presidency of Bengal, 6 miles south of the city of Moorsheadabad, on the river Bhagruttee. It contains extensive barracks for British troops.

BERINGTON, JOSEPH, an English Catholic author, born in the county of Shropshire, in 1744, died in Berkshire, Dec. 1, 1827. He was educated at the college of St. Omer, in France, and exercised sacerdotal functions in France for many years. His first work was "A Letter on Materialism, and Hartley's Theory of the Human Mind" (1776). About this time, the English Catholics found their position much stronger in the arena of public opinion, and began to think of appearing there openly. Bering-

ton, in 1779, published a letter to Fordyce, on his "Sermon against Popery." In 1780 appeared his "State and Behavior of English Catholics from the Reformation till 1780." In 1786 he came forward with "An Address to the Protestant Dissenters," who had lately petitioned for a repeal of the corporation and test acts. In 1787 appeared the "History of Abelard and Heloise," with their genuine letters, and "An Exposition of Roman Catholic Principles, in reference to God and the Country," and other pamphlets. In 1790, Berington gave to the world a "History of Henry II." (of England), vindicating the character of Becket from Lord Lyttleton's attacks. In 1798 appeared his "Memoirs of Gregorio Panzani," papal legate to England in 1684-'86, translated from the Italian. This publication displeased many of the author's own persuasion, who called in question the authenticity of the memoirs, but without success. In 1796 he published a tract in deprecation of using the device of pretended miracles as a means of rousing the Italian peasantry against the French. But his most important work appeared in 1814, a "Literary History of the Middle Ages," giving an account of the state of learning from "the close of the reign of Augustus to its revival in the 15th century."

BÉRIOT, CHARLES AUGUSTE DE, an eminent violinist, born at Louvain, in Belgium, Feb. 20, 1802. He early showed an aptitude for the violin, and in 1821 went to Paris to perfect himself in the performance of it, under Viotti, and other accomplished masters. Soon after, he performed in public, at the same time with Paganini, and at once took high rank as a violinist. Subsequently he made extensive professional tours over Europe, and on his return to his native country, received a pension from the king. In March, 1836, he married the celebrated singer, Malibran, who died suddenly 6 months afterward. From that time until 1842 he gave concerts, and in that year was appointed professor of the violin in the conservatoire of Paris. His style of playing is finished and classical; but as a composer, he is not much esteemed.

BERKELEY, a county in the N. E. corner of Virginia, on the Potomac, organized in 1772, and named after Gov. Berkeley; area, about 250 sq. m. Its surface is uneven and broken, and its soil stubborn and underlaid with lime-stone and slate, through which permeate numerous sulphur and chalybeate springs. The Baltimore and Ohio railroad passes through it. Live stock, wheat, Indian corn, and wool, are its principal products. In 1850 it yielded 856,384 bushels of wheat, 171,686 of Indian corn, 50,581 of oats, 6,687 tons of hay, and 157,850 pounds of butter. There were 50 mills of different kinds, a railroad machine shop, 4 tanneries, 80 churches, and 550 pupils attending public schools. In 1850, its real estate was valued at \$4,408,018; in 1856, at \$5,097,188, showing an increase of 15 per cent. Value of live stock in 1850,

\$366,140. Pop. in 1850, whites, 9,566; free colored, 249; slaves, 1,956; total, 11,771. Capital, Martinsburg.

BERKELEY, a market town and parish of Gloucestershire, England, situated about 1½ mile from the Severn, on one of its tributaries; pop. of the parish, 4,844. The town is built on an eminence in a rich valley, famous for its dairy products, particularly for its cheese. It has a handsome church, in which Dr. Jenner was buried, a grammar school, town hall, and market house. The Bristol and Gloucester railway passes through the place. It was a town of great wealth and importance at the time of the Norman conquest. The coal trade, formerly considerable, has fallen off of late years, and timber and malt are the articles chiefly dealt in. Berkeley castle, in which Edward II. was confined and murdered in 1327, stands on an eminence S. E. of the town. It is one of the finest specimens of an old feudal castle in the kingdom, being in a perfect state of preservation.

BERKELEY, GEORGE, an Irish prelate and philosopher, born at Kilcristin, in the county of Kilkenny, March 12, 1684, died at Oxford, Jan. 18, 1753. His father, William Berkeley, came of a family noted for its loyalty to Charles I., and was himself rewarded by the collectorship of Belfast. The son received his early education at Kilkenny school, was subsequently transferred to Trinity college, Dublin, and became fellow of that institution in 1707. About the same time, he published a mathematical tract, which attracted some notice, and this was followed, in 1709, by a much more important work, "An Essay toward a new Theory of Vision." In this he maintained the doctrine that the eye has no natural perception of space, and that all its perceptions of distance, size, and position, are derived from the sense of touch. This theory has been very generally adopted, although questioned by Sir David Brewster, one of the best authorities in modern science. Berkeley himself vindicated his theory in a pamphlet written 24 years after his essay was published; but this tract is not included in his published works. In 1710 appeared his work entitled, "A Treatise concerning the Principles of Human Knowledge," &c.; and in 1713, his "Dialogues between Hylas and Philonous." In these famous works, Berkeley denies the existence of matter, and argues that it is not without the mind, but within it, and that that which is generally called matter is only an impression produced by divine power on the mind, by means of invariable rules styled the laws of nature. These works gained many converts to Berkeley's theory, yet some writers insist that they contain the strongest arguments against revelation, when they were in fact really intended to combat the fallacies of the enemies of revealed religion. Beattie's opinion is that they have a sceptical tendency, and Hume expresses himself even more plainly, regarding them as the best weapons of scepticism to be found in

any author, ancient or modern. Nothing can be more plain, however, than that they were composed by one who placed implicit trust in revelation, and that no idea of their being used as arguments against it was entertained by the author. His writings brought him into notice with the distinguished men of his time, and being intimate with Swift, he formed the acquaintance of Pope, Arbuthnot, Prior, &c; and in 1718 he accompanied the earl of Peterborough to Italy, as chaplain and secretary of legation. He returned next year to England, but soon again set out with a Mr. Ashe, and on this tour paid his celebrated visit to Malebranche, the French philosopher, who became so excited in a discussion with Berkeley, on the recent theory of the non-existence of matter, that he, being ill at the time, was rendered worse, and died a few days afterward. Berkeley remained 4 years abroad with his pupil; he devoted much time to Sicily, and collected materials for an account of its natural history, which were unfortunately lost at sea. On his return to England he was most cordially received in learned circles, but was entirely dependent on his fellowship in Trinity college, until Mrs. Vanhomrigh, the celebrated Vanessa, bequeathed him £4,000 sterling. In 1724 he was made dean of Derry, the value of the living being £1,100 per annum. But worldly wealth had little value in Berkeley's estimation, and having formed the plan of establishing a college in the Bermudas, for the purpose of training pastors for the colonial churches, and missionaries to the Indians, he accordingly took a letter from Swift to Lord Carteret, who, after long delays, promised the aid of the government. It was in anticipation of the happy results of his scheme that Berkeley wrote his well-known stanzas, in which occurs the oft-quoted verse:

Westward the course of empire takes its way;
The four first acts already past,
A fifth shall close the drama with the day;
Time's noblest offspring is the last.

He now, Aug. 1728, married the daughter of the Right Hon. John Forster, speaker of the Irish house of commons, and in the next month set sail for Rhode Island, where he arrived, in Newport harbor, after a tedious passage of 5 months, Jan. 23, 1729. The dean thus writes of his new residence: "This island is pleasantly laid out in hills and vales, and rising grounds; hath plenty of excellent springs and fine rivulets, and many delightful landscapes of rocks and promontories, and adjacent lands. The town of Newport contains about 6,000 souls, and is the most thriving place in all America for bigness." Soon after the dean's arrival, he bought a farm about three miles from Newport, and erected a house which is still standing; and many interesting reminiscences exist of his sojourn in the island, where his memory is fondly cherished. His family circle, including some of his wife's relatives, was a large one, and among the

number was Smibert, the painter, one of the earliest portrait artists who visited America. He painted a large picture of the dean and family (introducing himself into the group), which now hangs in the Trumbull gallery of Yale college. Not far from his house, and adjacent to the sea, lie the hanging rocks (so called), where, at their most elevated point, Berkeley found a natural alcove, roofed and open to the south, commanding a wide expanse of the ocean, and in it, tradition relates, he meditated and composed his "Alciphron, or Minute Philosopher." But the scheme for the college failed, the government aid promised by Carteret was never granted, and, after a residence of 2½ years, Berkeley returned to England, leaving his infant son buried in the yard of Trinity church, Newport, and giving to Yale college a library of 880 volumes, as well as his estate in Rhode Island, called Whitehall. In 1734 he received, as a special mark of favor from Queen Caroline, the bishopric of Cloyne. This place he held for nearly 20 years, dividing his time between the duties of his diocese, which he fulfilled in the most exemplary manner, and his literary labors. In the latter years of his life, he became rather subject to hypochondria, and, in hopes of benefiting himself, had recourse to tar water, which he was constantly drinking and recommending to his friends; even writing a treatise on its virtues. His works, written at this period, are, "The Analyst," directed principally against Halley and the other mathematical sceptics; "Queries proposed for the Good of Ireland;" a letter to the Roman Catholics during the rebellion of 1745; another to the Catholic clergy, entitled "A Word to the Wise;" "Sirius, a Chain of Philosophical Reflections and Enquiries concerning the Virtues of Tar-water," and "Further Thoughts on Tar-water." In 1751, feeling himself infirm, and desiring to be near his son, who was about to enter Christ church, Oxford, he wished to resign his bishopric, which the king would not permit, but gave him leave to reside where he pleased. He removed to Oxford in July, 1752, and died there after a residence of only 6 months. So peaceful was his end, that his wife, who was reading to him one of Sherlock's sermons, was not aware of his having ceased to breathe, until some time after his family discovered that his limbs were already stiffened in death. Berkeley is not alone remembered for his works, but for a character of the most exalted Christian purity. Pope ascribed to him "every virtue under heaven;" and Atterbury wrote of him: "So much understanding, knowledge, innocence, and humility, I should have thought confined to angels, had I never seen this gentleman." In Trinity church, Newport, Rhode Island, where he often preached, is to be seen the organ he presented to the society after he became bishop; and to the sequestered home which he built, now occupied as a farm-house and sadly neglected, repair, from the throng of summer fashion, many who reverence the name of

Berkeley, and his mind of the rarest spiritual beauty.

BERKELEY, GEORGE HENRY FREDERIC, a British general, born July 6, 1785, died at Richmond, near London, 1857. He served in the Peninsular war and at the battle of Waterloo. His military abilities, in addition to his family connections, led to his gradual promotion to the rank of general, in 1854. From Feb. to Dec. 1852, he was surveyor-general of the ordnance under the earl of Derby's cabinet, and in the interest of the same party, he was afterward elected a member of parliament for Devonport.

BERKELEY, SIR WILLIAM, royal governor of Virginia for a portion of the reigns of Charles I. and II., and during the protectorate of Cromwell, was born in the vicinity of London, died at Twickenham, July 18, 1677. The date of his birth cannot be ascertained with accuracy, but from the rolls of the university of Oxford, it appears he was graduated M. A. in 1629, and immediately afterward he travelled on the continent, and returned to England "accomplished and learned." He was sent from England to Virginia as governor in 1641, succeeding Sir Thomas Wyatt, which position he maintained with a few brief interruptions until 1660. He connected his name inseparably with the colonial history, exhibiting great ability and zeal, and maintaining the royal authority when it had fallen everywhere else. When Cromwell sent a fleet to subdue the refractory planters, he was able to make terms, and after the death of "worthy Thomas Matthews," was elected governor by the people of Virginia without dissent. He remained at the head of affairs for a long time, and only lost popularity in consequence of his high-handed measures and severity toward the adherents of Nathaniel Bacon, after the death of that unfortunate leader. Many of these were put to death—among them Thomas Hansford, a planter of wealth and position, who was the first person judicially executed in Virginia. The conduct of Berkeley produced great dissatisfaction, and though under his rule suffrage had been made universal, the planters had influence enough to have him recalled, which was soon done, and he died in England before he was able to have an interview with the king. Charles II. is reported to have said on his arrival in England: "The old fool! he has shed more blood in his naked country, than I have taken for my father's murder." In his reply to commissioners sent to inquire into the colony, Berkeley said: "Thank God! there are no free schools nor printing presses, and I hope there will be none for a hundred years, for learning has brought disobedience, and heresy, and sects into the world, and printing has divulged these and other libels." Berkeley's elder brother, John, who had been placed by Charles II. in the house of peers, attributed his brother's death to mortification at the king's reception of the commissioners' report.

BERKENHOUT, JOHN, an English physi-

cian and naturalist, of Dutch descent, born at Leeds, 1780, died 1791. His father sent him to Berlin to study foreign languages, instead of which the young man entered the Prussian army, and left it, as captain, in 1756, when he returned to Edinburgh, where he studied medicine, and subsequently practised with success at Isleworth, in Middlesex. In 1778 he was employed on a mission to the American congress at Philadelphia, and his services were rewarded with a pension, which the English government granted him with the more readiness as he had suffered imprisonment upon a charge of a treasonable character, which was unfounded.

BERKHAMSTEAD, GREAT, a market-town of Hertfordshire, England, lying on the Grand Junction canal, and London and Birmingham railway, 28 miles N. W. of London. Pop. in 1851, 8,395. The town, which lies in a deep valley, is irregularly built, and contains a large church, a grammar school, a blue-coat school, gaol, house of correction, and the ruins of a strong castle in which Henry II. at one time resided, with his court. It is the birth-place of Cowper, the poet.

BERKHEY, JAN LEFRANCOY VAN, a Dutch naturalist and poet, born at Leyden, Jan. 23, 1729, died March 3, 1812. He was a skillful anatomist, and his "Natural History of Holland" obtained for him the professorship of natural history at the university of Leyden. His poems, though somewhat inflated, have considerable merit, especially one written in celebration of the 200th anniversary of the siege of his native city by the Spaniards, which received great applause when read before a numerous audience, Oct. 4, 1774. Attached to the Orange party, he was subjected to severe persecutions, and after the outbreak of 1807, his property was so reduced that he died in a state of comparative indigence.

BERKS, a south-eastern county of Pennsylvania, intersected by Schuylkill river, and drained by Tulpehocken, Maiden, Manatawny, and Little Swatara creeks. On its north-western boundary is a mountain range, called the Kittatinny, or Blue mountains; another chain, called here South mountain, but known in Virginia as the Blue Ridge, traverses the south-east central part, and between these two ranges lies the extensive and fertile Kittatinny valley, comprising the greater part of the county. The soil here is of limestone formation, and is carefully cultivated. The productions in 1850 amounted to 811,947 bushels of Indian corn, 577,668 of wheat, 880,769 of oats, 246,358 of potatoes, 83,257 tons of hay, and 1,873,294 pounds of butter. There were 168 flour and grist mills, 76 saw mills, and a large number of factories of various kinds. The county contained during the same year 102 churches, and 9 newspaper offices. The public schools numbered 14,156 pupils. There are a number of rich iron mines, which are industriously and profitably worked. Copper is found in small

quantities in connection with the iron. The exportation of the various productions of the county is facilitated by the Schuylkill and the Union canals, and by the Philadelphia and Reading railroad. Berks was settled by Germans in 1784. It was organized in 1752, and named from Berkshire, England. Area, 920 sq. m. Pop. in 1850, 77,129. Capital, Reading.

BERKSHIRE, a county of Massachusetts, area about 1,000 sq. m.; pop. in 1855, 52,791. It is at the western extremity of the state, extending across its entire breadth, and embracing a great variety of beautiful and picturesque scenery. The surface is diversified by mountains, hills, valleys, and rolling lands. In the northern part is Saddle mountain, the highest summit in Massachusetts. The soil is fertile and well watered by the Housatonic, Deerfield, Farmington, Hoosick, and several smaller rivers. Most of the land is devoted to grazing purposes. In 1850 the county produced 240,899 bushels of corn, 369,642 of potatoes, 92,460 tons of hay, 1,060,807 pounds of butter, and 2,575,145 of cheese. There were a number of cotton, woollen, paper, and other factories, 87 churches, 5 newspaper establishments, and 10,218 pupils attending public schools. Marble, iron, and limestone, are the principal minerals. Two railroads, connecting Albany, N. Y., with Boston and with Bridgeport, Conn., traverse this county, and 2 branch railroads are included within its limits. Berkshire was organized in 1770, and named from the county of the same name in England. Capital, Lenox.

BERKSHIRE, a central county of England, in the Oxford circuit, almost exclusively agricultural, and lying in the basin of the Thames; area, 752 sq. m.; pop. in 1851, 170,065. It is well watered by the Thames, the Kennet, the Loddon, the Ock, and the Auburn, with other smaller streams and rivulets. It is traversed by the Great Western railway, by means of which a direct communication is opened with London and the west of England, and by 2 navigable canals. The surface is undulating and well wooded. The climate of Berkshire is one of the healthiest in England. The soil is chalk and stiff clay, with a fine rich loam in the valleys. The land is well cultivated, the various improvements in agriculture being promptly tried and adopted. Small yeomen, with farms of 40 to 100 acres, are numerous in this county. The principal towns of Berkshire are Abingdon, Newbury, Reading, and Windsor. Reading is the shire town. The antiquities of Berkshire are not numerous. A cave called Wayland Smith's cave, in which a fairy smith once had a residence, has been converted into a barrow by antiquarian examination. There is a stone about 18 cubic feet in size, near a place called Kingstonisle, which, on being blown into through holes on the surface, emits a powerful sound that can be heard some miles off. The White Horse is a Saxon monument. It is a figure of a horse about 370 feet in length cut on the

side of a hill in the chalk. The turf which accumulates on the surface is cleared away every few years. The royal residence of Windsor is in Berkshire, and a great part of the ancient forest is also included in the county. Wallingford castle and Denniston castle are also places of interest.

BERLICHINGEN, Götz, or GOTTFRIED VON, one of the last of the feudal knights of Germany, whom the genius of Goethe has immortalized, in an early drama, founded upon the autobiography of Götz. He was born at Jaxthausen, in Würtemberg, in the latter part of the 15th century; died July 23, 1562. He was the contemporary of Maximilian I., the predecessor of Charles V. A bold, restless, and reckless warrior, he had lost his right hand in a battle, and supplying its place by an iron one, was thence called Götz of the Iron Hand. Having long carried on private war against the powerful lords, his neighbors, he at last took part with the peasants, in their bloody insurrection against the nobles; but less from any feeling of sympathy in their cause, than from personal motives, and hatred of the new order of civil life, which was then beginning to be enforced. In 1518 he declared war against the free city of Nuremberg, arrested the merchants returning from Leipzig, plundered their goods, and consigned many to the dungeons of his stronghold on the Jaxt. In the end, his numerous offences caused the emperor to lay him under the ban of the empire, and to impose a fine upon him of 14,000 florins. The fine was paid, and he was again restored to his civil rights; but refusing to desist from his turbulent practices, he was besieged in his castle by the imperial troops. He defended himself with stubborn valor, until he received a wound, from which he died. His autobiography was printed at Nuremberg in 1781, in 1776, and, for the third time, in Breslau in 1818. (See *Allgemeine Geschichte des grossen Bauernkriegs, von Dr. W. Zimmermann, Stuttgart, 1841.*)

BERLIN, the capital of Prussia, in the province of Brandenburg, is situated on the Spree, in a sandy plain, the largest of Germany, on a deep and still growing deposit of infusoria, 180 feet above the level of the sea. It is one of the largest and best built cities of Europe, is renowned for its university, and its scientific, literary, and artistic developments, and is a great industrial and commercial emporium. It originated in 2 cities, Berlin and Köln, and is divided into 11 precincts, namely: Old Berlin, Old and New Köln (on an island of the Spree), Luisenstadt (on the left bank), Friedrichstadt, Friedrichswerder, Dorotheenstadt, Friedrich-Wilhelmstadt, Spandauer and Stralauer Viertel, Königstadt, and the suburbs of Vogtland and Potsdamer-Vorstadt. It is surrounded by a nearly circular wall of 10½ miles long, with 17 gates, and 2 smaller gates, of which the Brandenburg gate is remarkable for its architectural beauty, and the statue of Victory driving 4 horses, the whole of copper,

which, in 1807, was removed by the French to Paris, whence the Prussians brought it back in 1814. The foundation of the original cities, whose names are of Slavonic descent, cannot be ascertained, but reaches back to the 12th century. Among the architectural monuments of the 18th century, the Klosterkirche, the Nicolaikirche, and Marienkirche, are masterpieces of art, particularly the first, and the third, with its tower 286 feet high. To a somewhat later period belong the Berlinische Rathhaus, the residence of the margraves and electors of Brandenburg, and the later royal residences in the Breite-Strasse and Post-Strasse. The present royal palace was begun in 1442, and was rebuilt after 1669. The city owes many improvements to the "Great Elector," Frederic William, who enlarged the population by a colony of French refugees, about the year 1680, and founded several of the new suburbs. He also founded the library, picture-gallery, and the museum of art, and many schools and churches. The armory, another masterpiece of art, was established in 1706, by his successor, the first king of Prussia, Frederic III., when Berlin had 60,000 inhabitants. After 1720, a great many Bohemian and Saltzburgian refugees, driven out on account of Protestantism, found an asylum in the newly built Friedrichstadt. The same king built a great many substantial and ornamental buildings. Under Frederic the Great even more was done for the city; the opera-house was built in 1742, the Catholic Hedwig church, an imitation of the Pantheon, in 1778, the university building in 1760, the cathedral, and the park called the Thiergarten. He demolished the fortifications of the city. He and his successor, Frederic William II., aided, by liberal encouragement, the ascendancy of Prussian and Berlin manufactures, of which the French refugees had laid the first foundation. In 1800, the city had already over 200,000 inhabitants. Since 1815, the architect Schinkel has enriched Berlin with a number of tasteful buildings, of which the Schauspielhaus, the Werdersche Kirche, the architectural school, and the splendid new museum, the finest building of the city, must be mentioned. The new opera-house, built on the site of the old one, burnt in 1843, is magnificent. Since that time, an abundance of palace-like edifices have sprung up. Among the statues in the public squares and places, the equestrian statue of Frederic the Great, by Rauch, erected in 1851, deserves mention; as does the equestrian statue of the great elector, on the elector's bridge; the 6 statues of the great generals of the 7 years' war (Schwerin, Seydlitz, Ziethen, Winterfeld, Keith, and the duke of Dessau) on the Wilhelmplatz; the statues of Bülow and Scharnhorst, near the Königswache; and the statue of Blücher, by Rauch, on the magnificent opera-place. The royal palace, with over 600 rooms and saloons, and several palaces of the princes, are remarkable. The streets are mostly straight, long, and regularly laid

out, the Linden-Strasse being the most splendid. The whole city is well lighted with gas, well paved, with granite sidewalks, and well provided with pleasure-grounds in the environs.—The city government consists of a major or burgomaster, of a deputy-major, and of 22 aldermen. The term of office of the major is 12 years, and that of the other magistrates 6 years. They are appointed by a municipal board, which is composed of 101 members, who are elected for 6 years by the permanent residents of the city. The yearly expenditure of the city is \$1,500,000. The population amounted, in 1850, to 405,000, in about 14,000 buildings (among which are 40 churches), and in 1855, to 426,602. Of these, 380,000 were Protestants, 10,000 Catholics, 10,000 Jews, and 5,200 so-called Christian Catholics, beside some thousands in minor sects. The original Slavonic inhabitants of Berlin, like those of the whole of Brandenburg, were in part exterminated, in part Germanized, in the 11th and 12th centuries. The native Berliners are renowned for their quick and sharp wit and dry humor, their literary and artistic tastes, their general intelligence, and passionate love of music. Scarcely any city in the world can rival Berlin in the number of its gifted natives, among whom Frederic the Great, the Great Elector, Mendelssohn-Bartholdy, the Humboldts, Heinsius, the German grammarian, L. Devrient, Wolff, the sculptor, Gans, Zumpt, Ancillon, Bekker, both the Tiecks, both the Schadows, must be mentioned.—The university, founded in 1810, has boasted in speculative philosophy, the possession of such men as Fichte, Hegel, and Schelling; in natural science, Humboldt, Steffens, Lichtenstein, Mitscherlich, Schubert, Dove, Ehrenberg; in mathematics, Ohm, Dirichlet, Jacobi; in astronomy, Encke; in medicine, Schönlein, Müller, Jüngken, Dieffenbach, Langenbeck; in philology, Boeckh, Bekker, Bopp, Lachmann, Zumpt, both the Grimms, Gerhard, Ritscher; in history, Raumer, Ranke; in geography, Ritter and Roos; in jurisprudence, Savigny, Gans, and a host of others; in theology, Schleiermacher, Marheineke, Neander, Nitzsch. During the last 20 years, however, its renown has considerably declined, especially in theology, jurisprudence, philology, and philosophy. During the winter semestre of 1857-'58 the attendance of students was as follows: Protestant theology, 812; Catholics, none; political science, 607; medicine, 808; philology, 343; natives, 1,090; foreigners, 480; *hospitanti*, 851; total number, 2,421. The number of professors and teachers at the university is 175. The library, under the direction of the renowned Pertz, has 500,000 volumes, and many valuable manuscripts, and is the largest and best in Germany; connected with it is a separate university library, for the exclusive use of teachers and students, of 100,000 volumes. The clinical, anatomical, and chemical institutions and collections, the botanic garden, the mineral cabinet, the obstetric establishment, the zoological

museum, are among the best of their kind in the world. Beside the university, there is, at Berlin, an academy of sciences and arts, whose members also belong, for the most part, to the former; among the 6 gymnasia that of the Gray convent is celebrated, and none are insignificant. The astronomical observatory, the school for midwives, the seminary for teachers, and that for female teachers, an architectural school and a technical academy, a missionary institute, an academy for military surgeons, 9 technical schools, a school of farriery, a cadets', an artillery and engineer school, and a great number of public and private primary and secondary schools, are deserving of mention. There are scores of scientific, literary, and artistic societies of almost every kind, and public lectures of the highest merit are nowhere so common as in Berlin. Every second year there is a public exhibition of productions in the fine arts, while the sculptures and paintings in the ateliers of Cornelius, Begas, Magnus, Kiss, Drake, and others, are generally open for public inspection. The old museum is a gallery of pictures and antique vases; the new one, opposite the king's palace, in one of the finest public squares of the world, comprises the Egyptian museum, arranged and enriched by the celebrated Lepsius, a gallery of pictures and statuary, and the celebrated frescoes of Kaubach in the stairway. The armory, undoubtedly the finest in Europe, in which there are weapons enough to equip 150,000 men, is artistically arranged. The private picture-galleries of M. Wolff, Consul Wagener, and Count Raczynski, are rich, and open to public inspection. Among the numerous singing societies, the singing academy, founded in 1790, and the two Liedertafeln, are worthy of mention. The royal opera and theatre, once rendered celebrated by such artists as Heik, Devrient, Wolff, Crelinger, Seydelmann, have sadly declined since the reign of the present king, and so have the 5 other theatres, among which is a French one. The number of churches is small, and though the present king has built 3, they do not accommodate one-third of the population; but even these churches are never filled. Among the great number of benevolent institutions, there is a large hospital called the *Charité*, 2 orphan asylums, Wadzeck's institution, the Louisenstiftung, and other hospitals, and the institutes for the blind and deaf, an insane asylum, the invalid asylum, and many others.—Berlin is the largest manufacturing, trading, and commercial place of Prussia, and owes in this respect much to former kings. Royal manufacturing and commercial institutes, like the *Seehandlung*, monopolize whole branches of industry, but in spite of this, private enterprise is generally thriving. Machine-shops, iron foundries, wool, silk, cotton, and other manufactures, are conducted on a large scale; the dyeing establishments, the manufactories of ribbon, gold, silver, looking-glasses, carriages, musical instruments, porcelain, and paper, and the sugar

refineries, are renowned; the tapestry, carpeting, wax-cloth, tin and wooden ware, wood and marble imitation ware, the composition metal fabrics, the philosophical instrument manufactories, and many others, must not be forgotten.

BERLINGHIERI, ANDREA VAOCA, an Italian surgeon, born in Pisa, in 1772, died in the same city, Sept. 6, 1826. He studied anatomy at Paris, under Desault, Pelletan, Baudelocque, Dubois, and Boyer, and in England, under Hunter and Bell, and, on his return to Pisa, received the degree of doctor of medicine, and published some observations on Bell's system of surgery. In 1799 he was appointed to assist his father, who was professor of surgery in the university of Pisa, and, 3 years later, was placed at the head of the school of clinical surgery, which was then founded. He invented useful instruments for performing the operations of cystotomy and cesophagotomy, and for the treatment of trichiasis, the lachrymal fistula, and the fracture of the femur bone. He made improvements in many other surgical instruments and processes, and was the author of numerous treatises on professional topics.

BERLIOZ, HECTOR, French musical composer, born at Côte Saint André, in the department of Isère, Dec. 11, 1808. He was educated for the medical profession, but devoted his leisure to the study of music. At Paris, where he had been sent to complete his knowledge of the healing art, he neglected the lectures of the faculty, and entering the *conservatoire de musique*, was discarded by his father, a country physician, and earned a bare subsistence by singing in the chorus at one of the Paris theatres. Devoting himself to music, he carefully studied composition, won the 2d prize at the conservatoire in 1828, and the 1st prize in 1830, by his cantata of "Sardanapalus." This success made him a pensioner of the academy of fine arts, at whose expense he visited Italy for 18 months. On his return his compositions showed that he had employed his time advantageously. Public opinion was divided as to the merits of his productions. Liszt declared them admirable; Paganini's admiration was unusually expressed, in the form of a check on his banker for 20,000 francs in favor of M. Berlioz. His requiem, in 1837, performed at the church of the *Invalides*, at the funeral of Gen. Damrémont, established his reputation. His first opera, "Benvenuto Cellini," was produced in Sept. 1838, and did not succeed, so much had he abandoned the old rules of art. Very popular, on the other hand, was the grand dramatic symphony of "Romeo and Juliet," performed at the conservatoire in Nov. 1839. His symphonies are allowed to be his best compositions, and abound in grand orchestral combinations and effects. Most remarkable among them are the *Symphonie funèbre et triomphale*, written, in 1840, for the inauguration of the column of July, in the *Place de la Bastille*. As a conductor, M. Berlioz has distinguished himself in Germany, Russia, and England, as well

as in France. Under his direction, in 1844, 1,200 musicians performed, at Paris, the "Hymn to France," which he composed for that occasion. M. Berlioz, who is a prolific composer, is also an accomplished art critic, and has contributed largely, in that capacity, to the *Journal des Débats*. He is librarian to the *Conservatoire de musique*. Soon after his return from Italy, in 1838, M. Berlioz married the beautiful Miss Harriet Smithson (born March 18, 1800), an Irish lady, who, after performing with marked success in the higher characters of tragedy and comedy, at Drury Lane theatre, was principal actress at the English theatre in Paris, in 1829-'30. M. Berlioz, who first saw her while he was yet a pupil at the conservatoire, so greatly admired her in the character of Juliet, that he formed the determination to attach her to him by the tenderest of all ties, should fortune ever enable him to do so. Madame Berlioz, who withdrew from the stage on her marriage, died at Paris in 1854.

BERME, in fortification, a horizontal bank of ground left standing between the upper interior edge of the ditch and the exterior slope of the parapet of a work. It is generally made about 8 feet wide. Its principal object is to strengthen the parapet, and to prevent the earth of which it is composed from rolling down into the ditch, after heavy rain, thaw, &c. It may also serve sometimes as an exterior communication round the works. It is, however, not to be overlooked that the berme serves as a very convenient resting and collecting place for storming and scaling parties, in consequence of which it is entirely done away with in many systems of permanent fortification, and in others protected by a crenellated wall, so as to form a covered line of fire for infantry. In field fortification, or the construction of siege-batteries, with a ditch in front, a berme is generally unavoidable, as the scarp of the ditch is scarcely ever revetted, and without such an intermediate space, both scarp and parapet would soon crumble under the changes of the weather.

BERMONDSEY, a parish of the county of Surrey, England, forming one of the suburbs of London. It is included in the borough of Southwark, on the east. Pop. in 1851, 48,128. Shipbuilding and tanning are extensively carried on here.

BERMUDAS, or **SOMERS ISLANDS**, in the Atlantic ocean, lat. 32° 15' N., long. 64° 50' W., 580 miles S. S. E. from Cape Hatteras. They belong to Great Britain, and contain above 12,000 acres; pop. in 1851, exclusive of troops, convicts, and government officials, 11,092, of which 6,428 were colored. The number of islets is considerable; the principal are Bermuda, or Long island, St. George's, St. David's, Somerset, and Ireland. They are of coralline formation, the rocks being in different stages of progress. The islands are healthy, the climate is delightful. Vegetable productions of all kinds are in great abundance; the potatoes are an article of export especially to the United States, where they

arrive long before the native crop is ripened, and the arrowroot excels that of any other place. The fisheries are productive, and whale-fishing, on a small scale, is carried on. There are no fresh-water springs, and the rain water is stored in tanks. The situation of the group in the edge of the trade-wind has given them an unpleasant notoriety for storms and hurricanes, and "the vexed Bermoothes" is a title which justly applies to them. The Bermudas are a naval and military station, for which purpose they have been fortified. They are a convict settlement of Great Britain, but the deportation of criminals has not been to any considerable extent. In 1850 there were 1,566 convicts. The islands are supposed to have been discovered by Juan Bermudez, in 1522. In 1609 Sir George Somers was wrecked on the Bermudas, and made his way to Virginia (his original destination) in 2 cedar-built vessels. He was sent back from the Virginian settlement to procure a store of the wild hogs from the Bermudas, but he died in the islands, and his men bore away for England. In 1612 the islands were settled by charter from James I., and in 1620 a regular government was established, and the population, having been greatly increased, was estimated to amount to 10,000 persons, probably an exaggeration. The government is in the hands of a governor, council, and legislative body. In 1852 Bermuda had 42 vessels of 2,952 tons. In 1850 the imports were £180,500; exports, £19,960; revenue, £12,680; expenditure, £16,227, the deficiency being made up by parliament. The military expenditure in 1850 was £70,000; the convict expenditure, £80,000. These figures are sterling, the currency being one-third less in value.

BERMUDEZ, **GZRONIMO**, an old Spanish poet, supposed to have been born about 1530, and to have been alive in 1589. He was born in Galicia, resided some time in Portugal, and was a professor of theology at Salamanca. His most important works were 2 tragedies on the subject of Ines de Castro, entitled respectively *Nise lastimosa* (Nise or Ines, of which Nise is an anagram, the unfortunate), and *Nise laureada*, or Ines triumphant. The first of these is copied, indeed almost translated, from *Ines de Castro*, a tragedy by the Portuguese poet Ferreira. The other is a continuation of the first, and is original, but has little merit. Bermudez was well acquainted with Latin, and wrote a poem in that language entitled *FHesperoida*, which he afterward translated into Spanish verse.

BERMUDEZ DE CASTRO, **DON SALVADOR**, a Spanish poet, born at Cadiz in 1817. He graduated at the university of Sevilla, where he also took the degree of doctor of laws. He was afterward one of the editors of the *Revista de Madrid*, in which publication appeared many of his poems.

BERN, one of the principal cantons of Switzerland, and the largest and most populous of all; area variously estimated at from 2,565 to 3,500 sq. m.; pop. 332,050 in 1818, 407,918

in 1837, 458,801 in 1850, all of whom, except 54,044 Catholics and 1,000 Mennonites, belong to the Reformed church, and, with the exception of perhaps 100,000 Frenchmen, in the Jura, to the German nationality. Bern is situated between lat. $46^{\circ} 20'$ and $47^{\circ} 50'$ N., and long. $6^{\circ} 50'$ and $8^{\circ} 27'$ E. It is bounded N. by France, E. by the cantons of Soleure, Aargau, Lucerne, Unterwalden, and Uri; S. by Valais, and W. by Vaud, Freyburg, and Neuchâtel. The city of Bern is the capital; pop. in 1850, 26,840. The southern frontier toward Valais is formed by the highest crest of the main chain of the Swiss Alps, the so-called Bernese Alps, with the following peaks reaching to over 11,000 feet above the sea: Finsteraarhorn (14,106), Schreckhorn (13,886), Wetterhorn (12,176), Mönch, Eiger, Jungfrau (13,718), and numerous high mountain passes, but only 8 of them practicable for carriages, of which the Grimsel pass is the most commodious. From the crest northward stretch some dozen of steep and mighty mountain ridges, none much over 8,000 feet high. The valleys between these ridges are much deeper cut into the mountain base than any other on the northern slope of the Alps, and therefore exceedingly fertile and mild, in spite of the general elevation of the canton, which around the city of Bern is still as high as 1,850 feet. From the city down toward the north-west these ridges meet with the forerunners of the Jura mountains, embracing within long ridges long parallel valleys, with a climate somewhat rougher than in the rest of the canton. There is in the whole canton no very broad plain, the comparatively largest being near the lake of Thun; but the main valleys, those of the rivers Aar, Birs, Doubs, Emmen, Simmen, and others, are generally extensive. More than 20 lakes, of which those of Thun, Brienz, and Biel are noteworthy, and a great number of small streams, water the canton. The northern half of it may be said to be rather an agricultural, the southern rather a grazing region, while the less fertile high valleys of the Jura form a manufacturing district. The only agricultural produce for export is cheese, while in many years grain is imported; the southern valleys produce chestnuts, figs, walnuts, wine, fruit; the forests consist of white and red pine and beeches. Hay is produced abundantly, but not for export. Gold is washed in the Emmen river, iron ore occurs here and there, naphtha in the little brooks of the valley of Habkern, marble and sandstone are of frequent occurrence, and excellent millstones are fabricated from the granite of Wittlisbach. Timber as well as carved wooden wares is to some extent exported. Flax is largely grown in the valley of the Emmen; there are linen, woollen, and silk manufactories in the city and vicinity, and extensive watch manufactories are carried on in the Jura mountains. The manufacturing industry is only lately beginning to be more varied and extensive. The transportation traffic is lively, especially as during the last 4 years Switzerland has

built 3 or 4 railroad lines, connecting with the German and future Italian railroads. Roads and bridges are at present being built extensively; the canton has had a bank since 1836. —The population of the canton belongs in the northern portions to the Alemanni or Swabian, in the southern to the Burgundian tribe, which settled here after the expulsion of the Romans in the 5th century. The original political constitution of these tribes was thoroughly democratic, and remained so down to the 18th century or later, when it gradually became impaired in the open country by the increasing power of the nobility, and later by that of the patrician families of the city. Belonging to the Burgundian kingdom, and from the 11th century to the German empire, the territory of Bern was very small, until it was made a free city by the emperor Frederic II. in 1218, and increased after the end of the 18th century by successful struggles with the emperor and the more powerful nobles, while the lower class of the nobility found in the city a ready refuge from the magnates, and were absorbed into the patrician ranks. After the accession of Bern to the confederation of the 4 original cantons in 1353, it contributed greatly to the success of the Swiss in their struggles against Austria, Burgundy, and Milan; and it extended its sway by purchase and conquest of Aargau, Vaud, and other districts, and a century ago embraced an area of nearly double its present size. In 1528 the reformation began to spread rapidly all over the canton, and soon became the exclusive religion. The growing wealth of Bern and its aggressive policy could not be favorable to the preservation of the old popular liberty. Gradually the country people were reduced to obedience, first in the conquered districts, which under Austrian, Burgundian, and Savoyard sway had already become inured to subjection, afterward in the other districts, and at last, subsequently to the 16th century, even the poorer classes of the city and the country towns. The patrician families, possessed of great wealth, administrative skill, and ancient military glory, had their standing army, and after 1470, when the citizens rebelled for the last time against them, and drove them out at least for a single year, this aristocracy restricted more and more the remaining popular rights, and became a well-cemented oligarchy, proud and haughty as that of Venice. The first French revolution put an end to this state of things in 1798, and after the unfortunate battles of that year founded a Helvetic republic, in which the territory of Bern was divided into 4, and subsequently into 8 cantons, Aargau and Vaud becoming independent. After the restoration, and under the influence of Austria, the ancient aristocracy and government were, with a few democratic changes, revived, until the second French revolution, when the new constitution of 1831 was forced upon the patricians. The concessions made by them did not, however, satisfy the growing democratic spirit of the masses, and

in 1846, under the influence of the Sonderbund excitement, a revision was enforced which was ratified by a popular vote of 36,079 against 1,267. It abolished all class privileges, established perfect equality of all citizens before the law, granted political rights, and the right of voting, to every male citizen of over 20; organized the administration and judiciary after modern democratic principles; guaranteed the rights of man, and promised trial by jury. Taxes having been unknown in Bern up to that time, a new income tax of $\frac{1}{10}$ of 1 per cent. became indispensable for carrying out these new institutions, and created dissatisfaction enough to give a momentary ascendancy to the conservative party in 1851, but without producing a permanent change in the new form of government. The late civil wars of Switzerland and the political reforms of Bern have involved the canton in a public debt of 4,000,000 francs, which, however, is overbalanced by a public domain and capital of nearly 80,000,000, making Bern comparatively the richest state of Europe. The yearly expenditure is about 4,000,000 francs, the public income rather less.—The city of Bern, at present the seat of the administration of the Swiss confederation, is in a romantic situation, on a peninsula formed by the river Aar, which here forms a splendid cataract, and is crossed by a stone bridge. The city is very well built, with many remnants of ancient architecture, of which the cathedral, the church of the Holy Ghost, built in 1122, the citizens' hospital, the magnificent infirmary with an endowment of 8,000,000 francs, are remarkable. The city library has 30,000 volumes, including valuable historical treasures, and a museum of natural history, founded in 1802. The university, founded in 1884, has about 50 teachers, and 200 students. The federal palace, the iron Murtner gate, the unsurpassed promenades, with one of the grandest prospects of the Alps, are noteworthy. The city as well as the canton possesses great attractions for the host of travellers, from whom a considerable income is derived. The wall ditches are renowned for bears, kept there as the heraldic animal of Bern, which derives its name from it, and are stocked with deer. The armory, the richest in Switzerland, is full of ancient weapons and curiosities. The city is, to some extent, industrial, and produces cloth, printed linen, silk and cotton fabrics. Haller, the German poet, one of the founders of German classical poetry, was born here. Pop. in 1851, 26,840.

BERNADOTTE, JEAN BAPTISTE JULES, marshal of the French empire, prince of Ponte Corvo, and, under the name of Charles XIV. John, king of Sweden and Norway, was born Jan. 26, 1764, at Pau, in the department of Basses Pyrénées, died March 8, 1844, in the royal palace at Stockholm. He was the son of a lawyer, and was educated for that profession, but his military impulses induced him to enlist secretly, in 1780, in the royal marine, where he

had advanced to the grade of sergeant, when the French revolution broke out. Thence his advancement became rapid. In 1792 he served as colonel in Oustine's army; commanded a demi-brigade in 1793; was in the same year, through Kleber's patronage, promoted to the rank of brigadier-general, and contributed, as general of division in the army of the Sambre and Meuse, under Kleber and Jourdan, to the victory of Fleurus, June 26, 1794, the success of Jülich, and the capitulation of Maestricht. He also did good service in the campaign of 1795-'96 against the Austrian generals Clairfait, Kray, and the archduke Charles. Ordered by the directory, at the beginning of 1797, to march 20,000 men as reinforcements to the Italian army, his first interview in Italy with Bonaparte decided their future relations. In spite of his natural greatness, Bonaparte entertained a petty and suspicious jealousy of the army of the Rhine and its generals. He understood at once that Bernadotte aspired to an independent career. The latter, on his part, was too much of a Gascon to justly appreciate the distance between a genius like Bonaparte and a man of abilities like himself. Hence their mutual dislike. During the invasion of Istria Bernadotte distinguished himself at the passage of the Tagliamento, where he led the vanguard, and at the capture of the fortress of Gradisca, March 19, 1797. After the so-called revolution of the 18th Fructidor, Bonaparte ordered his generals to collect from their respective divisions addresses in favor of that *coup d'état*; but Bernadotte first protested, then affected great reluctance in obeying, and at last sent an address to the directory, but quite the reverse of that asked for, and without conveying it through Bonaparte's hands. The latter on his journey to Paris, whither he repaired to lay before the directory the treaty of Campo Formio, visited and cajoled Bernadotte at his headquarters at Udine, but the following day, through an order from Milan, deprived him of half his division of the army of the Rhine, and commanded him to march the other half back to France. After many remonstrances, compromises, and new quarrels, Bernadotte was at last prevailed upon to accept the embassy to Vienna. There, acting up to the instructions of Talleyrand, he assumed a conciliatory attitude which the Paris journals, inspired by Bonaparte and his brothers, declared to be full of royalist tendencies; expatiating, in proof of these charges, on the suppression of the tricolored flag at the entrance of his hotel, and of the republican cockade on the hats of his suite. Being reprimanded for this by the directory, Bernadotte, on April 18, 1798, the anniversary of a Viennese anti-Jacobin demonstration, hoisted the tricolored flag with the inscription, "Liberty, equality, fraternity," and had his hotel stormed by a Viennese mob, his flag burnt, and his own life endangered. The Austrian government declining to give the satisfaction demanded, Bernadotte withdrew to Rastadt with all his legation; but the directory, on the advice of Bonaparte,

who had himself been instrumental in provoking the scandal, hushed up the affair and dropped their representative. Bernadotte's relationship to the Bonaparte family consequent upon his marriage, in Aug. 1798, with Mlle. Désirée Clary, the daughter of a Marseilles merchant, and Joseph Bonaparte's sister-in-law, seemed but to confirm his opposition to Napoleon. As commander of the army of observation on the upper Rhine, in 1799, he proved incompetent for the charge, and thus verified beforehand Napoleon's judgment at St. Helena, that he was a better lieutenant than general-in-chief. At the head of the war ministry, after the directorial émeute of the 80th Prairial, his plans of operation were less remarkable than his intrigues with the Jacobins, through whose reviving influence he tried to create for himself a personal following in the ranks of the army. Yet one morning, Sept. 18, 1799, he found his resignation announced in the *Moniteur* before he was aware that he had tendered it. This trick was played upon him by Sièyes and Roger Ducos, the directors allied to Bonaparte. While commanding the army of the west, he extinguished the last sparks of the Vendean war. After the proclamation of the empire, which made him a marshal, he was intrusted with the command of the army of Hanover. In this capacity as well as during his later command of the army of northern Germany, he took care to create for himself, among the northern people, a reputation for independence, moderation, and administrative ability. At the head of the corps stationed in Hanover, which formed the first corps of the grand army, he participated in the campaign of 1805 against the Austrians and Prussians. He was sent by Napoleon to Iglau, to observe the movements of Archduke Ferdinand in Bohemia; then, called back to Brunn, he, with his corps, was posted at the battle of Austerlitz in the centre between Soult and Lannes, and contributed to baffle the attempt of the allied right wing at outflanking the French army. On June 5, 1806, he was created prince of Ponte Corvo. During the campaign of 1806-'7 against Prussia, he commanded the first *corps d'armée*. He received from Napoleon the order to march from Naumburg upon Dornburg, while Davoust, also stationed at Naumburg, was to march upon Apolda; the order held by Davoust adding that, if Bernadotte had already effected his junction with him, they might conjointly march upon Apolda. Having reconnoitred the movements of the Prussians, and made sure that no enemy was to be encountered in the direction of Dornburg, Davoust proposed to Bernadotte a combined march upon Apolda, and even offered to place himself under his command. The latter, however, sticking to the literal interpretation of Napoleon's order, marched off in the direction of Dornburg without meeting an enemy during the whole day; while Davoust had alone to bear the brunt of the battle of Auerstädt, which, through Bernadotte's absence, ended in an indecisive victory. It was only the meeting of

the fugitives of Auerstädt with the fugitives from Jena, and the strategical combinations of Napoleon, that counteracted the consequences of the deliberate blunder committed by Bernadotte. Napoleon signed an order to bring Bernadotte before a court-martial, but on further consideration rescinded it. After the battle of Jena, Bernadotte defeated the Prussians at Halle, Oct. 17, conjointly with Soult and Murat, pursued the Prussian general Blücher to Lübeck, and contributed to his capitulation at Radzau, Nov. 17, 1806. He also defeated the Russians in the plains of Mohrungen, not far from Thorn, Jan. 25, 1807. After the peace of Tilsit, according to the alliance concluded between Denmark and Napoleon, French troops were to occupy the Danish islands, thence to act against Sweden. Accordingly, March 28, 1808, the very day when Russia invaded Finland, Bernadotte was commanded to move upon Seeland in order to penetrate with the Danes into Sweden, to dethrone its king, and to partition the country between Denmark and Russia; a strange mission for a man destined soon after to reign at Stockholm. He passed the Belt and arrived in Seeland at the head of 82,000 Frenchmen, Dutch, and Spaniards; 10,000 of the latter, however, contriving, by the assistance of an English fleet, to decamp under Gen. de la Romana. Bernadotte undertook nothing and effected nothing during his stay in Seeland. Being recalled to Germany, there to assist in the new war between France and Austria, he received the command of the 9th corps, mainly composed of Saxons. The battle of Wagram, July 5 and 6, 1809, added new fuel to his misunderstandings with Napoleon. On the first day, Eugène Beauharnais, having debouched in the vicinity of Wagram, and dashed into the centre of the hostile reserves, was not sufficiently supported by Bernadotte, who engaged his troops too late, and too weakly. Attacked in front and flank, Eugène was roughly thrown back upon Napoleon's guard, and the first shock of the French attack was thus broken by Bernadotte's lukewarmness, who, meanwhile, had occupied the village of Adlerklaun, in the centre of the French army, but somewhat in advance of the French line. On the following day, at 6 o'clock in the morning, when the Austrians advanced for a concentric attack, Bernadotte deployed before Adlerklaun, instead of placing that village, strongly occupied, in his front. Judging, on the arrival of the Austrians, that this position was too hazardous, he fell back upon a plateau in the rear of Adlerklaun, leaving the village unoccupied, so that it was immediately taken by Bellegarde's Austrians. The French centre being thus endangered, Massena, its commander, sent forward a division to retake Adlerklaun, which division, however, was again dislodged by D'Aspre's grenadiers. At that moment, Napoleon himself arrived, took the supreme command, formed a new plan of battle, and baffled the manoeuvres of the Austrians. Thus Bernadotte

had again, as at Auerstädt, endangered the success of the day. On his part, he complained of Napoleon's having, in violation of all military rules, ordered Gen. Dupas, whose French division formed part of Bernadotte's corps, to act independently of his command. His resignation, which he tendered, was accepted, after Napoleon had become aware of an order of the day addressed by Bernadotte to his Saxons, in discord with the imperial bulletin. Shortly after his arrival at Paris, where he entered into intrigues with Fouché, the Walcheren expedition (July 30, 1809) caused the French ministry, in the absence of the emperor, to intrust Bernadotte with the defence of Antwerp. The blunders of the English rendered action on his part unnecessary; but he took the occasion to slip into a proclamation, issued to his troops, the charge against Napoleon of having neglected to prepare the proper means of defence for the Belgian coast. He was deprived of his command; ordered, on his return to Paris, to leave it for his principedom of Ponte Corvo, and, refusing to comply with that order, he was summoned to Vienna. After some lively altercations with Napoleon, at Schönbrunn, he accepted the general government of the Roman states, a sort of honorable exile.—The circumstances which brought about his election as crown prince of Sweden, were not fully elucidated until long after his death. Charles XIII., after the adoption of Charles August, duke of Augustenburg, as his son, and as heir to the Swedish throne, sent Count Wrede to Paris, to ask for the duke the hand of the princess Charlotte, daughter of Lucien Bonaparte. On the sudden death of the duke of Augustenburg, May 18, 1810, Russia pressed upon Charles XIII. the adoption of the duke of Oldenburg, while Napoleon supported the claims of Frederic VI., king of Denmark. The old king himself offered the succession to the brother of the late duke of Augustenburg, and despatched Baron Moerner to Gen. Wrede, with instructions enjoining the latter to bring Napoleon over to the king's choice. Moerner, however, a young man belonging to the very large party in Sweden which then expected the recovery of their country only from an intimate alliance with France, on his arrival at Paris, took upon himself, in connection with Lapie, a young French officer in the engineers, with Seigneul, the Swedish consul-general, and with Count Wrede himself, to present Bernadotte as candidate for the Swedish throne, all of them taking care to conceal their proceedings from Count Lagerbälke, the Swedish minister at the Tuileries, and all firmly convinced by a series of misunderstandings, artfully kept up by Bernadotte, that the latter was really the candidate of Napoleon. On June 29, accordingly, Wrede and Seigneul sent despatches to the Swedish minister of foreign affairs, both announcing that Napoleon would, with great pleasure, see the royal succession offered to his lieutenant and relative. In spite of the opposi-

tion of Charles XIII., the diet of the States, at Orebro, elected Bernadotte crown prince of Sweden, Aug. 21, 1810. The king was also compelled to adopt him as his son, under the name of Charles John. Napoleon reluctantly, and with bad grace, ordered Bernadotte to accept the offered dignity. Leaving Paris, Sept. 28, 1810, he landed at Helsingborg, Oct. 2, there abjured the Catholic profession, entered Stockholm Nov. 1, attended the assembly of the states, Nov. 5, and from that moment grasped the reins of the state. Since the disastrous peace of Frederikahamn, the idea prevailing in Sweden was the reconquest of Finland, without which, it was thought, as Napoleon wrote to Alexander, Feb. 28, 1811, "Sweden had ceased to exist," at least as a power independent of Russia. It was but by an intimate alliance with Napoleon that the Swedes could hope to recover that province. To this conviction Bernadotte owed his election. During the king's sickness, from March 17, 1811, to January 7, 1812, Charles John was appointed regent; but this was a question of etiquette only, since from the day of his arrival, he conducted all affairs. Napoleon, too much of a parvenu himself to spare the susceptibilities of his ex-lieutenant, compelled him, Nov. 17, 1810, in spite of a prior engagement, to accede to the continental system, and declare war against England. He suppressed his revenues as a French prince; declined to receive his despatches directly addressed to him, because he was not "a sovereign his equal;" and sent back the order of the Seraphim, bestowed upon the new-born king of Rome by Charles John. This petty chicanery afforded to the latter the pretext only for a course of action long decided upon. Hardly was he installed at Stockholm, when he admitted to a public audience the Russian general, Suchtelen, who was detested by the Swedes for having suborned the commander of Sveaborg, and even allowed that personage to be accredited as ambassador to the Swedish court. On Dec. 18, 1810, he held a conference with Czernicheff, in which he declared himself "to be anxious to win the good opinion of the czar," and to resign Finland forever, on the condition of Norway being detached from Denmark, and annexed to Sweden. By the same Czernicheff, he sent a most flattering letter to the czar Alexander. As he thus drew nearer to Russia, the Swedish generals who had overthrown Gustavus IV., and favored his own election, retired from him. Their opposition, reëchoed by the army and the people, threatened to become dangerous, when the invasion of Swedish Pomerania by a French division, Jan. 17, 1812—a measure executed by Napoleon on secret advice from Stockholm—afforded at last to Charles John a plausible pretext for officially declaring the neutrality of Sweden. Secretly, however, and behind the back of the diet, he concluded with Alexander an offensive alliance against France, signed March 27, 1812, at St. Petersburg, in which the annexation

of Norway to Sweden was also stipulated.—Napoleon's declaration of war against Russia made Bernadotte for a time the arbiter of the destinies of Europe. Napoleon offered him, on the condition of his attacking Russia with 40,000 Swedes, Finland, Mecklenburg, Stettin, and all the territory between Stettin and Volgast. Bernadotte might have decided the campaign and occupied St. Petersburg before Napoleon arrived at Moscow. He preferred acting as the *Lepidus* of a triumvirate formed with England and Russia. Inducing the sultan to ratify the peace of Bucharest, he enabled the Russian admiral Tchitchakoff to withdraw his forces from the banks of the Danube and to operate on the flank of the French army. He also mediated the peace of Orebro, concluded July 18, 1812, between England on the one side, and Russia and Sweden on the other. Frightened at Napoleon's first successes, Alexander invited Charles John to an interview, at the same time offering him the command-in-chief of the Russian armies. Prudent enough to decline the latter offer, he accepted the invitation. On Aug. 27 he arrived at Abo, where he found Alexander very low-spirited and rather inclined to sue for peace. Having himself gone too far to recede, he steeled the wavering czar by showing that Napoleon's apparent successes must lead to his ruin. The conference resulted in the so-called treaty of Abo, to which a secret article was appended, giving the alliance the character of a family compact. In fact, Charles John received nothing but promises, while Russia, without the slightest sacrifice, secured the then invaluable alliance of Sweden. By authentic documents it has been recently proved that it depended at that time on Bernadotte alone to have Finland restored to Sweden; but the Gascon ruler, deluded by Alexander's flattery, that "one day the imperial crown of France, when fallen from Napoleon's brow, might rest upon his," already considered Sweden as a mere *pis-aller*. After the French retreat from Moscow, he formally broke off diplomatic relations with France, and when England guaranteed him Norway by treaty of March 18, 1818, he entered the coalition. Furnished with English subsidies, he landed in May, 1818, at Stralsund with about 25,000 Swedes and advanced toward the Elbe. During the armistice of June 4, 1818, he played an important part at the meeting in Trachenberg, where the emperor Alexander presented him to the king of Prussia, and where the general plan of the campaign was decided upon. As commander-in-chief of the army of the north, composed of Swedes, Russians, Prussians, English, Hanseatic, and north German troops, he kept up very equivocal connections with the French army, managed by an individual who frequented his head-quarters as a friend, and grounded on his presumption that the French would gladly exchange Napoleon's rule for Bernadotte's, if he only gave them proofs of forbearance and clemency. Consequently, he prevented the generals placed

under his command from taking the offensive, and when Bülow twice, at Grossbeeren and Dennewitz, had vanquished the French despite his orders, stopped the pursuit of the beaten army. When Blücher, in order to force him to action, had marched upon the Elbe, and effected his junction with him, it was only the threat held out by Sir Charles Stewart, the English commissary in his camp, of stopping the supplies, that induced him to move on. Still the Swedes appeared on the battle field of Leipzig for appearance's sake only, and during the whole campaign lost not 200 men before the enemy. When the allies entered France, he retained the army of Sweden on her frontiers. After Napoleon's abdication, he repaired personally to Paris to remind Alexander of the promises held out to him at Abo. Talleyrand cut short his puerile hopes by telling the council of the allied kings, that "there was no alternative but Bonaparte or the Bourbons,—every thing else being a mere intrigue." Charles John having, after the battle of Leipzig, invaded the duchies of Holstein and Schleswig, at the head of an army composed of Swedes, Germans, and Russians, Frederic VI., king of Denmark, in the presence of vastly superior forces, was forced to sign, Jan. 14, 1814, the peace of Kiel, by which Norway was ceded to Sweden. The Norwegians, however, demurring to being so unceremoniously disposed of, proclaimed the independence of Norway under the auspices of Christian Frederic, crown prince of Denmark. The representatives of the nation assembling at Edisvold, adopted, May 17, 1814, a constitution still in force, and the most democratic of modern Europe. Having put in motion a Swedish army and fleet, and seized upon the fortress of Fredrickstadt, which commands the access to Christiania, Charles John entered into negotiation, agreed to consider Norway as an independent state and to accept the constitution of Edisvold, carried the assent of the assembled storting Oct. 7, and Nov. 10, 1814, repaired to Christiania, there, in his own and the king's name, to take the oath upon the constitution.—Charles XIII. expiring Feb. 5, 1818, Bernadotte, under the name of Charles XIV. John, was acknowledged by Europe as king both of Sweden and Norway. He now attempted to change the Norwegian constitution, to restore the abolished nobility, to secure to himself an absolute veto and the right of dismissing all officers, civil and military. This attempt gave rise to serious conflicts, and led, March 18, 1828, even to a cavalry charge upon the inhabitants of Christiania, who were celebrating the anniversary of their constitution. A violent outbreak seemed imminent, when the French revolution of 1830 caused the king to resort for the moment to conciliatory steps. Still Norway, for the acquisition of which he had sacrificed every thing, remained the constant source of embarrassments throughout his whole reign. After the first days of the French revolution of 1830, there existed a single man in Europe who

thought the king of Sweden a fit pretender for the French throne, and that man was Bernadotte himself. More than once he repeated to the French diplomatic agents at Stockholm, "How does it happen that Laffitte has not thought of me?" The changed aspect of Europe, and, above all, the Polish insurrection, inspired him for a moment with the idea of making front against Russia. His offers in this sense to Lord Palmerston meeting with a flat refusal, he had to expiate his transitory idea of independence by concluding, June 28, 1834, a convention of alliance with the emperor Nicholas, which rendered him a vassal of Russia. From that moment his policy in Sweden was distinguished by encroachments on the liberty of the press, persecution of the crime of *lèse-majesté*, and resistance to improvements, even such as the emancipation of industry from the old laws of guilds and corporations. By playing upon the jealousies of the different orders constituting the Swedish diet, he long succeeded in paralyzing all movement, but the liberal resolutions of the diet of 1844, which were to be converted, according to the constitution, into laws by the diet of 1845, threatened his policy with final discomfiture, when his death occurred.—If Sweden, during the reign of Charles XIV., partly recovered from a century and a half of miseries and misfortunes, this was due not to Bernadotte, but exclusively to the native energies of the nation, and the agencies of a long peace.

BERNALILLO, a county in the E. central part of New Mexico, with an area of about 900 sq. m. The Rio Grande and the Rio Puerco, which intersect it, and the Rio de San Jose, which forms its southern boundary, are the principal rivers. The surface in the E. is rough and mountainous. In 1850, this county yielded 17,701 bushels of wheat, 89,803 of corn, 2,800 of peas and beans, 8,500 pounds of wool, and 890 gallons of wine. Pop. 7,751. Albuquerque is the chief town.

BERNARD, saint and doctor of the Latin church, born at Fontaines, in Burgundy, in 1091, died in the abbey of Clairvaux, Aug. 20, 1153. Both of his parents belonged to noble families. His father, Tescelin, was a knight of the house of Châtillon, and his mother, Aleth, was a daughter of Count Bernard of Montbard. Bernard was the 8d of a family of 7 children. Before his birth his mother saw in her dream a white dog, spotted with red, and barking fiercely. The dream was interpreted to signify that the child to be born should be a guardian to the church, a foe to its enemies, and should bark loudly against them. It is uncertain whether the name afterward given to Bernard of "watch-dog to the church," produced the legend, or the legend produced the name. From the beginning the child was destined to a clerical and scholastic life, to which he was inclined by his native preference. His early thirst for knowledge was amazing. While his brothers shared the martial tastes of their rest-

less father, Bernard, busy in his studies, was astonishing all his teachers at Châtillon. His love for study was accompanied and sanctified by ascetic practices, which his mother encouraged. Visions of the infant Jesus were granted to him, and both mother and son were instant in prayer that all worldly passions might be extinguished in their hearts. On his return from the school at Châtillon he entered into a sort of domestic cloister, the blessed society of which was too soon broken by the death of his mother. At this time he was 19 years old. His youthful friends took advantage of this event to try upon him the fascinations of a worldly life. But the memory of his mother was stronger than their persuasions; the charms of splendor, and fame, and love, which they set before him, could not change his native bias, and he determined, at any cost, to be a monk. The passion which tempted St. Anthony was cured, it is said, in Bernard's case by a timely bath in a tank of cold water, which chilled out of his body all impure and unhallowed heat. Like Augustine and Gregory, and many of the early fathers, he asserted a miraculous call to the monastic life. And he would not go alone to his convent. He remembered, like Dives in the parable, that he had "five brethren," and his first care was to make these brethren such as himself, and bring them to share his holy lot. Andrew and Bartholomew, younger brothers, were easily won. Guy, the eldest, was for a time retained by his wife, but a judicious appeal to her fears overcame her reluctance, and she consented to go to a nunnery and leave her lord to his religious destiny. A rich and warlike uncle was next the proselyte of his pious nephew, and giving up castles, and retainers, and treasure, assumed the cowl and frock of perpetual poverty. Gerard, the second brother, was more insensible. He loved the excitement of knightly life, and could not believe that the world and its good things ought to be despised. A wonderful vision disarmed his obstinacy. Lying wounded in a dungeon, he saw and heard the Holy Spirit calling to his mind a prophecy which his brother had made, that by that wound the Lord would find the way to his heart. Then, as to Paul at Philippi, the prison doors were opened, his chains were thrown off, and he was led into the church by Bernard to join the devoted brotherhood. The rule chosen by the brethren was the new Cistercian rule, and they applied themselves diligently to fulfil their season of novitiate. Bernard's discipline was rigorous in the extreme. His labors were severe, his fastings protracted, his sensibilities were blunted by various exposure, till he lost almost all sense of outward impressions. His meagre and haggard frame was a fearful witness of the struggle of the soul in its contest with the body. Bernard gloried in this physical weakness, and used it as a proselyting influence. His novitiate year brought numerous converts. Sons were separated from fathers, husbands from wives, the knight from his hall,

and the epicure from his pleasure, to try the blessing of a hermit life. A son and a sister of the devoted family remained yet to be won to the church. Nivard, the Benjamin of the house, was left to comfort the old father, forsaken by his children. But the boy preferred a heavenly to an earthly father, and the prospect of a fuller inheritance could not keep him back. "It is too unfair," said Nivard; "you give me earth while you take heaven. I must go with you." Daily new recruits were added, and before Clairvaux had gathered its company, the slopes of the Alps and Pyrénées testified, by their frequent processions and their multiplied vigils, to the efficient zeal of the young Cistercian evangelist. The year of novitiate was passed by the brethren in the convent of Oiteaux. In this time several new convents had been founded in the neighborhood. The abbot of Oiteaux, a shrewd and skilful judge of character, had discovered qualities in Bernard which indicated him as the proper head of a new foundation. In the year 1115, Bernard, with 12 monks, among whom were his brothers, was sent out to find in the province of Champagne a suitable place for a Cistercian community. He chose a wild gorge in the diocese of Langres, noted as a haunt of robbers, the ill-omened name of which was the "Valley of Wormwood." Here the self-denying brethren built their cells, arranged their duties, chose Bernard their abbot, and attracted by their sanctity such crowds of visitors that the new name of "Clairvaux," or "Beautiful Valley," seemed fairly justified. The numbers of the brotherhood rapidly multiplied. Their charities were the praise of all the region. Their austerities recalled the legendary story of eastern cenobites. The gifts which came to them were at once redistributed to the poor and the penitent. In all their labors, in all their watchings, in all their self-denials, Bernard was foremost, and the pride of asceticism was shamed by his ghastly countenance and emaciated frame. The fame of miracle was speedily added to the evidence of such endurance. Men came to Clairvaux to be healed of their infirmities by one whom sickness had reduced almost to spiritual proportions, and whose courage and power no disease or starvation seemed able to destroy. Without the care of an earthly friend, however, it is probable that the protection of the Divine Spirit would have failed to rescue the abbot from his obstinate self-immolation. This friend felt that it was too soon for so rare a man to die. Compelled by superior authority to submit himself to regimen and a physician, Bernard, against his will, recovered; but the chapter of his long sickness is as edifying as any of his life. William of Champeaux, the friend who saved him from himself, has given a glowing account of his interviews with the sufferer in those hours of pain, the patience, humility, trust, exaltation of that darkened cell,—the visible forms of saints, angels, and

the Virgin, which came to lend aid to their wailing devotees,—the celestial music which seemed to float around, and the inspired words which seemed to flow like a heavenly voice from the lips of this dying Christian. The restoration from such a sickness seemed a new miracle. It taught Bernard a useful lesson: that immoderate self-denial was not less an evil than immoderate indulgence. Henceforth, recognizing his own weakness of body, he was less enthusiastic in his austerities. The 12 succeeding years of Bernard's life were devoted to monastic work, either in the reform and direction of the convents already established, or in suggestions concerning new establishments. His correspondence in this period was vast, and he gave audience to great numbers who came to consult him. His studies were not less vigorously prosecuted, both in scriptural and patristic lore; and while metropolitan bishops marvelled at his sagacity, the monks of his convent listened with admiration to his daily religious readings. Augustine's theology and the Canticles of Solomon were favorite themes. In the year 1124, his heart's desire was gratified by the vows which the last of his family, Humbeline, his only sister, offered at one of the convents of his foundation. Two years before she had visited Clairvaux, and had been so impressed with the sanctity of its life that she returned determined to renounce the pomp of the world, the charms of her high social rank, and the society of her noble husband, for a home in the cloister. A posthumous sainthood rewarded her devotion. The eminent fitness of Bernard for public affairs compelled him gradually to engage in labors of a different kind. He was repeatedly called abroad to reconcile disputes between bishops and their dioceses, between the church and the nobles. No arbiter had such influence. The prelates of the church could depend upon him to sustain them against the civil power, but he asked in return that they should renounce the luxuries of secular living. Abbot Suger, prime minister of Louis the Fat, was persuaded by Bernard to relinquish his secular station and confine himself at St. Denis to his religious charge. Henry, archbishop of Sens, and Stephen of Paris, were supported in their appeal to Rome, against the king, by the commanding voice of the abbot of Clairvaux. At the council of Troyes, in 1128, he vindicated the canons of the church, and took part in those stormy debates about the excesses of the Templar knights. At the council of Châlons, in 1129, he assisted to depose the bishop of Verdun. Repeated offers of lucrative sees were steadily refused by him. He preferred to dictate Catholic faith and practice from his convent, rather than accept any bishopric. In the year 1130, an event occurred which drew Bernard from the seclusion of his convent, and caused him to make longer journeys and enter more into political life than ever before. Less than 50 years after the death of Hildebrand, the mag-

nificent papal empire which he had consolidated was threatened with ruin by a schism in the sacred college. Rival claimants disputed the divine right of spiritual lordships. Before the death of Honorius II., the succession had been apparently secured by Peter of Leon, a cardinal whose ability, learning, and eloquence, all confessed, whose wealth was unbounded, and whose genius for management few could resist. The chief objections to him were that he was the son of a Jew, and that his tastes were rather secular than religious. On the death of Honorius, without making official announcement or calling a regular meeting of the college, the cardinals who were hostile to Peter met secretly, and published simultaneously with the announcement of the death of the former pope, the name of the new one, Innocent II., whom they had chosen. The partisans of Peter, indignant at the act, held at once a counter meeting, and chose Peter, who took the name of Anacletus. The strife was unequal. Wealth and ability turned the scale in favor of the cardinal of Leon. Innocent and his partisans were compelled to seek refuge in Tuscany, and leave the Jew's son to reign in the capital of Christendom. The king of France seized the opportunity of interfering, and called a council at Étampes, near Paris, to decide between the claimants. Bernard came to this council, gave his support to Innocent, and procured a decree in favor of the exile. He sustained the cause of the poor claimant against the rich, of the humble Christian against the haughty grandee. It was easier, however, to decree the right of Innocent than to restore him to Rome or depose his rival. The consent of the sovereigns of Europe must first be obtained, and the pretensions of Anacletus must first be set aside in the secular courts. Bernard undertook the task of doing this. He became Innocent's missionary. Henry, of England, who was first visited, hesitated to admit the justice of Innocent's cause, but yielded to the obliging offer of Bernard: "You can answer to God for all your other sins," said the astute abbot, "leave this to me; I will take the responsibility!" From England, after a tour of preaching through France, in which he left every one devoted to Innocent, Bernard sought the German emperor, already half inclined to Innocent's party. At Liège the solemn meeting took place between the greatest of temporal and the chief of spiritual sovereigns (for Innocent had accompanied Bernard on this journey). Holding the bridle of the pope's horse, the emperor led his holy guest through the streets of the city. But more conspicuous than either pope or emperor in the procession was the gaunt and bent figure of that monk, whose works and worth had won for him, throughout all Europe, the renown of a saint. Lothaire was willing to defend the claim of Innocent, if he might be allowed the right of investiture, formerly exercised by the German emperors. Bernard would not make any such

concession, or consent to yield any point which the church had gained upon the state. He asked, and finally won from the emperor, an unconditional support of Innocent. The grateful pope in the next year, 1181, honored his advocate by a visit to Clairvaux, where himself and his companions were greatly edified and moved by the simple furniture, the coarse garments, the scanty fare, and the pious hymns of the Cistercian brotherhood. New privileges to the order were the result of this visit, and the tithes which they had paid to the elder order of Cluny from henceforth ceased. In 1182 Bernard accompanied Innocent into Italy. His labors in this peninsula were various and excessive. The division between its various states tended to hinder the restoration of Catholic unity. Some of them had already declared for Anacletus, in hatred to others who were favorable to Innocent. It was Bernard's joy to reconcile these hereditary foes. First Genoa, whose jealousy of Pisa was obstinate and deep-rooted, was subdued by the preaching of the great apostle, until the people almost forced him to stay as their chief bishop. Then Pisa, in turn, yielded to the persuasions of his eloquence. In turbulent Milan he found a harder task; but here, too, the prejudice of prelates and the passions of the multitude were charmed into submission, and the city claimed the saintly mediator to be the fit successor of Ambrose in their cathedral chair. Bernard could hardly withhold himself from their urgency. He granted them the partial boon of a Cistercian colony. In the mean time, the indefatigable missionary was found negotiating at the German court, to reconcile an imperial uncle with the nephews of his predecessor, Conrad and Frederic; and a finer issue of this secondary mission was the conversion of the duchess Aloïde, sister to Lothaire, from her scandalous life to the practice of piety. Returning, after 5 years of conflict, to his quiet home at Clairvaux, he was delighted to find its affairs peaceful and prosperous, unity of spirit among the brethren, and a welcome as fraternal as that which Alpine peasants had given him all along his way. If the shepherds came down from their rocks and begged him to bless their children, the monks wept for joy when they embraced the knees of their holy director. His hope of rest was soon disappointed. The embers of schism rekindled. Count William of Aquitaine, the boldest of French barons, had sworn an oath to listen to no sophistries which should persuade him and his people away from their allegiance to Anacletus. His arbitrary insolence, the terror inspired by his gigantic presence, and his real ability, both as a statesman and a general, made him a more formidable enemy than Bernard had thus far dealt with. He had deposed bishops who supported Innocent. Failing in his argument with this bold man, Bernard tried an experiment, such as Ambrose had tried with Theodosius. He chose the occasion of the holy mass in the church where William was wont to attend.

The mystic rite of transubstantiation performed, the monk, who seemed now to the multitude to be a very prophet of God, lifted the paten with its wafer, bore it out to meet the entering count, and, with stern voice and flashing eye, thus addressed him: "We have prayed to you, and you have despised us. With many servants of God we have prayed, and you have mocked our vows. Now comes to you the Son of the Virgin, the head of the church whom you persecute. Now stands here thy Judge, the Judge of all the earth! Wilt thou despise, as thou hast despised his servants, the Judge into whose hands thy soul shall fall?" Trembling, the crowd waited the issue. An instant more, and the scowling hero turned pale, and the haughty count fell like a dead man at the feet of the prophet. He rose a penitent; and two years later, they wondered to see this reckless leader go off to finish his course and die a martyr in pilgrimage to the shrine of the Spanish St. James. In 1137, Bernard was a 3d time summoned from the quiet of his convent, to plead the cause of Innocent, before King Roger, of Sicily, who had possessed himself of the holy city. The necessity of unity in the church, and the right of majorities to decide disputed questions, were arguments which Roger and his partisans could not well resist. The opportune death of Anacletus weakened the schism still further; and, although the form of electing his successor was tried, the party were forced to confess themselves vanquished, and the persevering abbot received the testimonies of their final submission. Innocent was installed at Rome, and Bernard was able to see the fruit of his 8 years of toil and contest. Thus far the public work of Bernard had been mainly against schism. He was now to enter the field against heresy, and in defence of traditional Catholic faith. A visit to the convent of the Paraclete, of which Heloise was abbess, had acquainted him with the views and principles of Abelard, the great scholastic reformer. Through his influence, in the year 1140, a council was held at Sens to consider those opinions. From a conviction that his cause was hopeless, or from fear, as some say, Abelard did not dare to justify himself before the council, and his default was pronounced, with his sentence as a heretic. His death at Cluny, on the journey which he was making to Rome, saved his adversary from the annoyance of further controversy. In this and subsequent years Bernard's life was embittered by misunderstandings with the pope, who preferred the good-will of the secular powers to the friendship of that religious vassal who had placed him on the papal throne. In touching reproaches Bernard expresses his sorrow at this ingratitude and neglect. His influence at Rome, however, was soon regained. After the short reigns of Celestine II. and Lucius II., one of his own spiritual children, another Bernard of Clairvaux, was called to the chair of St. Peter. Eugenius III. (for that was the name which the

Cistercian assumed) hastened to declare his full confidence in his religious father. Bernard could write to him playfully, but proudly: "They say that I am more the pope than you are." The confidence of Eugene was speedily proved by the work which he intrusted to his friend of preaching and organizing a new crusade. Already the Christian kingdom in Syria, which Godfrey and his followers had won, was rent by internal feuds, and menaced by the gathering forces of the Saracens, who had made head at Edessa. Returning pilgrims brought back doleful tidings, and the call for aid was too loud to be disregarded. King Louis, of France, was ready to go, and only asked for the sympathy of his people and the alliance of the German emperor. Bernard now took up the mission of Peter the Hermit. He ran through France and Germany, in cities and villages, stirring up high and low, arousing indifference, inflaming piety, opening the coffers of the rich, promising indulgence to the profligate, and calling all, saints and sinners, together, to come to the holy war. His success was instant and wonderful. More than once his robe was torn to shreds in furnishing crosses to the eager volunteers. He writes to Eugenius that the cities and castles are deserted, that the wives are becoming widows, and that there is hardly one man to 7 women. Soon he had to moderate the excitement and check the excesses of the host which he had gathered. He strove especially to prevent the persecution of the Jews, which was the first sign of the new Christian fury. In the year 1147 the 2 great expeditions set out. Confusion marked their way, and disaster followed them. The Greek emperor, in his dealing with Conrad, sustained the fame of his race for treachery, and suffered the German forces to be cut to pieces by their Moslem foes. The French expedition was equally unfortunate, and, though a fragment reached Syria and laid siege to Damascus, the climate and vices of that region finished the destruction which the fortunes of war had begun. Mortified and dejected, as well by the conduct of his queen as by the ruin of his enterprise, Louis came back to his kingdom, bringing with him scarcely a tenth of the grand army which had departed. The weight of the blame was thrown upon the adviser of the ill-starred expedition, and Bernard, who had deprecated the evils and protested against the blunders of the campaign, was cursed in hall and cabin, by priest and prince, by widow and orphan, for its fatal result. His firmness had well-nigh given way under such reproaches. His evident error in judgment was treated as crime, and the fact that he had not accompanied the host seemed to testify against him. The fame of Bernard, tarnished by this disaster abroad, was retrieved by his successful warfare with new heresy at home. He cleansed Languedoc from the scandal which Henry of Lausanne and Peter of Bruis, the Cathari, or Purists, leaders had brought upon that province. These men had inveighed against the vices of

the clergy, and proclaimed a return to the simple decencies of the gospel age. Bernard hated luxury in the priesthood, but he hated schism more; and the same voice which had protested against the persecution of Jews counselled the extermination of rebellious Christians. A rabbi could praise the good monk who had saved him from massacre, but numbers of men and women whose crime was that they exalted virtue above submission, were sent to death by the approval of this same monk. It is the darkest spot in Bernard's life. More pleasant is the story of his refutation, at the council at Rheims, in 1148, of the Sabellian bishop, Gilbert of Poitiers. Warned by the fate of Abelard, the heretic bishop found it expedient to save himself by judicious concessions. In vain, after this, did they try to engage Bernard in the preaching of a new crusade. His public life was finished. His last 5 years were passed in comparative retirement, varied only by literary occupations and the visits of distinguished friends. Guinard, king of Sardinia, and Pope Eugenius, were at different times his guests. The "burning and shining light of the Irish church," Malachi, saint and bishop, died on a visit to the home of his early friend, and it was Bernard's privilege to close the eyes and write the life of this dear brother in the faith. That biography established Malachi's right to sainthood. The abbess Hildegard, the marvel and the enigma of Christian Europe in all the 12th century, found in Bernard a friend who vindicated her at Rome, and believed that her gift of prophecy was real. In these last years the most remarkable of Bernard's compositions were written. But his physical powers were waning to their end. Early in 1158 a sickness attacked him, in which distress of mind aggravated his pains of body. His friend Eugenius had departed, with his other friends, before him, and he had no wish to live longer in a world so full of sin, and care, and sorrow. Sad words he dictated from his sick bed, telling the trial of his weary heart. Yet his faith did not fail, and he was ready for more service if the church had need of him. Summoned by the archbishop of Metz to heal a bloody feud which had arisen in his diocese, between the knights and the people, he rose from his bed, made a rapid journey of some 50 miles, and met the contending parties as they stood arrayed on either side of the Moselle. The nobles ridiculed the interference of this ghost, scorned his words, and laughed at the dream which he told them. But that very night the prophecy of peace which he left was fulfilled, the hearts of the knights were melted, and the *Gloria in excelsis* was chanted by the united hosts. This last effort was fatal. Bernard returned to his convent to die. At the age of 68, surrounded by his brethren, he breathed his last. His body was buried in the church at Clairvaux. He had been abbot 38 years. The public voice demanded his immediate canonization. In the year 1165, 12 years after his death, his name

was set in the calendar of the church by Pope Alexander, though, from the great number of candidates, it was not openly proclaimed among the saints until 1174.—Few men have better deserved this honor. Few have loved the church with more steadfast and unselfish devotion. Few have rendered to it more signal services. On his moral purity no stain rests. His stern integrity has never been doubted. He enforced upon others no rule to which he was not ready to conform, no duty which he was not ready to do. If he loved influence and was not insensible to praise, he compromised no principle, and he adopted no policy for the sake of power or applause. He was by nature loyal to tradition, and suspicious of novelty. Severe sometimes in his judgments of others, he was always severe in his judgment of himself. His temper was that of a champion and a ruler, but not of a despot. Skilled in diplomatic arts, he was yet intolerant of all temporizing or hesitation in the service of truth. The church knew him as a trusty servant, faithful to his profession, terrible to all its foes. Lacking that kindness of manner and that broad charity which made Peter the Venerable, of Cluny, the friend of the unfortunate, Bernard gained the ennobling reputation of guardian to the faith. No man of his age had a wider renown. No man of that age fills a larger place in its history. Bernard's reputation rests on 4 substantial grounds, his integrity and consistency of personal character, his remarkable executive ability, his eloquence as a preacher, and his affluence and skill as a writer. Of his personal character we have already spoken. In proof of his executive ability, apart from the fact that he was for a long term of years the virtual dictator of the church, we have the record of the monasteries which he founded or gathered, viz.: 35 in France, 11 in Spain, 10 in England and Ireland, 6 in Flanders, 4 in Italy, 2 in Germany, 2 in Sweden, 1 in Hungary, and 1 in Denmark. At Clairvaux at the time of his death, there were 700 brethren. Such organizing power was unprecedented in mediæval Christian history, and seemed to entitle Bernard to rank with Basil and Paul. It is not easy, at this distance of time, to measure Bernard's influence as a preacher and a writer. His treatises, authoritative as they still are, have been superseded by the works of Bellarmine and Aquinas, and his sermons do not justify or explain his singular fame for pulpit eloquence. It needs nice discrimination to separate his genuine writings from those which have been falsely attributed to him. Some of these latter are palpable forgeries; but some are close imitations of his style and manner. The genuine writings of Bernard may be divided into 8 classes: epistles, sermons, and treatises, moral and theological. Of the epistles 480 are contained in the collections of Mabillon and Martène, 439 of which were the work of Bernard himself, the remainder being either addressed to him or drawn up by his

secretary. These letters are addressed to 5 classes of persons: 1, to monks and abbots; 2, to archbishops, bishops, and secular priests; 3, to the pope and the various officials at the Roman court; 4, to princes, nobles, and statesmen; 5, to private individuals. The subjects of the letters are very various. Some are monastic, dwelling on the needs and the methods of cenobite life. Some are mystical, descending upon the doubts and struggles of the soul on its way to perfection. Some treat of the general principles of right and duty, some of particular applications of those principles. Many of the letters are concerned with matters of elections in the church, questions of disputed episcopal authority or fidelity. Many of them are political, many dogmatical, some highly polemic, and not a few purely complimentary and personal. Chronologically, the letters may be ranged into 4 series: the first covering 11 years, from 1119 to 1180; the second 8 years, from 1180 to 1188; the third 7 years, from 1188 to 1145; and the fourth the remaining 8 years of the writer's life. The general characteristics of all these letters are earnestness, energy, clearness of expression, and a fierce sincerity. One spirit breathes through them all. The style is unequal, in most instances rugged and harsh, quite lacking the grace which adorns the letters of Abelard. The efforts at wit are undignified, especially the occasional travesties of the sentences of the Scriptures. It may be said in mitigation of the judgment of Bernard's rough style, that the words of many of his epistles are not his own, that he furnished the thoughts to be clothed in words by his scribes. There are some in the collection, notably those addressed to Innocent and Eugenius, which are tenderly pathetic, and may pass as fine examples of this kind of composition. The sermons of Bernard, 340 in number, may be arranged into 4 classes: 86 on the Canticles of Solomon; 86 on the events of the ecclesiastical year; 48 on the saints and the virgin; and 125 miscellaneous. Most of them are short. The sermons on the Canticles exhibit Bernard's fondness for allegories, and his skill in extracting moral teaching from erotic and poetical description. They explain only the first 2 chapters of this book. Gilbert of Holland, about 25 years after Bernard's death, published a continuation of the series on the Canticles, bringing the work down to the middle of the 5th chapter. The sermons of Bernard cannot be regarded as eminent specimens of religious oratory. They are cold, ethical, sometimes even obscure. Written in Latin, they seem poorly adapted to make impression even upon those hearers to whom the Latin tongue was still intelligible. It is greatly to be regretted, that the sermons in the common tongue, by which Bernard was enabled to awaken such a mighty revival in Europe, have not been preserved to us, rather than the uninspiring and scholastic compositions which remain to attest his gifts as a preacher. The actual impressive-

ness of his preaching is paralleled only by the stories of the crowds in England and America which were moved and swayed by the appeals of Whitefield; while the written monuments of that preaching which survive seem, as in the case of Whitefield, wholly inadequate to such a result. The best sermons of the collection are the eulogies of departed brethren. Of the 12 treatises of Bernard, the first in time is entitled the "Twelve Degrees of Humility and Pride." This youthful treatise is very carefully drawn up, and the antitheses, though redundant, are often ingenious. The work on "The Love of God," seems to show that Bernard was not a believer in perfect disinterestedness of love. It is a logical and accurate treatise. The "Apology" is a severe polemic attack upon the disorders and extravagances of the monks of Cluny. The language is sharp and bitter. The treatise on "Grace and Free-will" is more subtle than thorough as a discussion of that subject. The treatise *De Conversione ad Clericos*, exposes the iniquities which had crept into the ecclesiastical life, and urges a reform. The "Exhortations to the Knights Templars," is a panegyric on that impetuous order of religious servants, with the anomaly of whose state Bernard's disposition and taste readily sympathized. Baptism and the Incarnation are treated in a work first addressed as a letter to Hugo St. Victor. Another treatise refutes the "Errors of Abelard." Another, on "Precept and Dispensation," answers interesting questions of monastic morality, and is still considered an excellent convent manual. The only biographical work of Bernard is his life of the bishop Malachi, which relates prodigies, and indulges equally in pious reflections and in harshness of censure. The last and most important of the treatises of Bernard is his work on "Consideration," suggested by the visit of Pope Eugenius to his monastery, and dedicated to that pontiff. It is in 5 parts. In the 1st, he insists upon the necessity of gaining and preserving the habit of religious meditation; in the 2d, he tells what a pope ought to be and to do; in the 3d, he deals with the relation of the nations of the earth to the papacy; in the 4th, he considers the officers and servants of the papal court; and in the 5th, he explains the relation of the pope to superior intelligences, to the angels, and to God. The writings of Bernard give us the idea of a patient and diligent scholar, working in a limited range of study. He knew well the letter of the Scriptures, but he quotes it chiefly from the Vulgate, and shows little acquaintance with the Greek or Hebrew text. Among the fathers, Augustine was his favorite, and his dogmatic system was a reproduction of that great master. A moderate knowledge of the classics, especially of Ovid, enables him to vary with occasional heathen fancies, the severe force of his argument and invective. He had the faculty of bringing in at the right time and place all his knowledge, and his singular memory enabled him to call up for practical

use illustrations which another would have lost. Yet he was able to assimilate his fruits of study, and no great doctor of the church seems less indebted to his culture for his influence. He was an original thinker, independent in his opinions, and his fresh strength makes the old views which he produces seem new and peculiar. In his case, a mind naturally imaginative was trained and disciplined to the exigencies of service in affairs and to the commanding restraints of established institutions and traditional truth. One would hardly be prepared to find in such a writer the talent of the hymnist, or to expect from such a source the stanzas of a Prudentius or a Gregory. Yet the works of Bernard have their appendix of anthology. The watchman of the church found leisure to be a poet. And among the most praised hymns of the Roman breviary is that long meditation upon the Saviour in stanzas of four-fold rhyme, *Jesu, dulcis memoria*, which has the charm of musical cadence, if it lacks the merit of correct Latinity.—The works of Bernard have been frequently republished. The standard edition is that of Mabillon, in 1690, in 2 vols. folio. This contains valuable notes, in addition to the edition of 1667. A new edition appeared in 1719 and in 1726. Another less valuable but more convenient edition, by the same famous Benedictine, is in 9 vols. 8vo. The biographies of Bernard, some of which descend most eloquently upon his power as a miracle-worker, which in this sketch has been left unnoticed, but which has been for ages and is still a source of the reverence in which as a saint he is held, leave nothing to be desired concerning his history. French, Italian, German, and English writers have made his life a special study. The most recent and accessible are the biographies of the abbé Ratisbonne (3 vols. Paris, 1846), Neander (Berlin, 1841), Montalembert, Daunon, in vol. 18 of "French Literary History," and Abel Desjardins (Dijon, 1845).

BERNARD, CLAUDE, a French physician and physiologist, born at St. Julien, in the department of Rhone, July 12, 1818. In 1834 he went to Paris, intending to pursue literature as a vocation, but not meeting with success, soon gave up the attempt, and devoted himself to the study of medicine. He has especially distinguished himself by his researches in comparative anatomy and physiology, and has been professor in the college of France during the last 10 years. He has made special studies of the liver and pancreas.

BERNARD, EDWARD, a versatile English scholar and divine, born May 2, 1688, near Towcester, in Northamptonshire, died at Oxford, Jan. 12, 1697. Distinguished for a rare knowledge of oriental languages and for his scientific attainments, he graduated with high honors at the university of Oxford, officiated in 1669 as deputy professor, and on Christopher Wren's retirement in 1678, as professor of astronomy, and finally in 1691, after having spent a year at Paris, as tutor to the children of

Charles II. by the duchess of Cleveland, he relinquished the astronomical chair, and became rector of Brightwell, in Berkshire. In mathematics he rendered himself especially useful at Oxford, while he left beside a great mass of unprinted matter, over 15 distinct scientific and theological publications and annotations on classical works. One of his most valued productions is on the subject of the ancient weights and measures; and the *Catalogus Manuscriptorum Angliæ et Hiberniæ*, prepared by him, and published in 1697, for the university of Oxford, is still used in that institution at the present day.

BERNARD, SIR FRANCIS, an English lawyer, governor of the American province of New Jersey, from 1758 to 1760, and of Massachusetts, from 1760 to 1769, died in London, July 1, 1818. It was his misfortune to preside over the latter province, and to be an advocate of the claims of the crown, and of coercive measures, in the period shortly preceding the outbreak of the American revolution. With no talent for conciliating, and no insight into the spirit which animated the people whom he governed, he fanned the discontent which the English ministry originated. He brought the troops into Boston, and prorogued the general court when it refused to make provision for their support. He secretly sought to undermine the constitution of the province, by changing its charter, so as to transfer the right of appointing the council from the general court to the crown. He was despised for his cowardice, duplicity, and avarice, and his letters to England show the readiness with which he distorted facts, and magnified trivial rumors into acts of treason. The house of representatives at length unanimously voted a petition to the king, humbly entreating that Sir Francis Bernard might be removed forever from the government of the province. He was recalled, and as he departed from Boston, the bells were rung, cannon fired after him from the wharves, and the liberty tree hung gayly with flags. The government, however, manifested its approbation of his course, by creating him a baronet. He was a man of erudition, had committed to memory the best passages of the best authors, and was a patron of Harvard college.

BERNARD, JACQUES, a French writer, born at Nyons, Sept. 1, 1658, died April 27, 1718. A minister of the reformed church, he fled to Holland upon the revocation of the edict of Nantes, and founded at the Hague a school for belles-lettres, philosophy, and mathematics. He continued the publication of the "Universal Library," which had been undertaken by Lelerc, and, in 1698, succeeded Bayle in editing the journal entitled the "Republic of Letters." He made a collection of the treaties of peace, truce, neutrality, suspension of arms, and alliance, and other international compacts in Europe from the time of Charlemagne.

BERNARD, JOHN, English actor, born at Portsmouth, 1756, died in London, 1830. He was an excellent light comedian, and had some

ability as a dramatic author. For many years he was joint manager of Plymouth theatre. His first appearance in London was in 1787, at Covent Garden theatre, as Archer in the "Beau's Stratagem," and was very successful. He was secretary for 9 years of the celebrated beef-steak club. In 1797 he appeared for the first time in the United States, at Birkett's circus (then fitted up as a theatre), Greenwich street, New York, as Goldfinch in the "Road to Ruin." He became one of the managers of the Boston theatre, in which capacity he continued for several years. Finally, he returned to England. His "Recollections of the Stage" (chiefly written by his son) relates his adventures up to the period (June, 1797) when he went to America. As he went on the stage in 1774, and quitted it in 1820, this period included exactly 28 years, or one-half of his theatrical career. The book, though full of anecdote, was not popular, and the second part, which was to have related Mr. Bernard's American experiences, never appeared.—WILLIAM BAYLE, son of the above, born at Boston, Mass., Jan. 1, 1808. He went to England with his father, and his first literary work of any importance, was the preparation for the press of his father's "Recollections of the Stage." Soon after this he commenced his career as a dramatic writer, and has supplied the London stage and actors with a quick succession of original plays, most of which have been as popular all over the United States as in England. Many of the pieces in which the late Tyrone Power made his most effective hits, were written by Bayle Bernard. Among his best known plays are "The Nervous Man and the Man of Nerve," "The Irish Attorney," "The Mummy," "His Last Legs," "Dumb Belle," "A Practical Man," "The Mid-dy Ashore," "The Boarding School," "The Round of Wrong," "A Splendid Investment," and "A Life's Trial." With the exception of Jerrold, no modern English dramatist has borrowed so little "from the French." Mr. Bernard's plots are well constructed, his leading characters distinctly individualized, and the *morale* of his incidents exemplary.

BERNARD, SAMUEL, a Parisian banker, born about 1651, died 1739. The son of an artist, he rose, by his financial abilities, to a position of great influence, and is said to have amassed a fortune of \$6,000,000. His services were put in constant requisition by the minister of finance, Chamillard, and his successor, Desmaretz, had more dealings with Bernard than with any other farmer of the public revenue in Paris. He was personally introduced to Louis XIV., and afterward to Louis XV., both monarchs deeming it prudent to treat their plebeian but powerful creditor with the utmost kindness and affability. Lending large amounts of money to poor officers and other insolvent parties, without the least prospect of return, he left the reputation of a man who made a skilful, but also a benevolent use of his means. His pecuniary ability was so great that he was supposed

to have been of Jewish origin, although he seems to have been born in the Christian faith. He was ennobled for his public services.

BERNARD, SIMON, French general of engineers, born at Dôle, April 28, 1779, died in Paris, Nov. 5, 1839, was educated by charity in his native town. He was appointed to the polytechnic school, whither he went on foot, and would have died of cold in the streets of Paris but for the care and kindness of a humble woman, who sheltered him and took him to his destination. At the school he profited greatly by the instructions of his masters, among whom were La Place, De Fleury, Fourcroy, and Monge, obtaining the second position in the class of engineering. He was appointed into the *corps de génie*, and first served in the army of the Rhine, in which he soon became a captain. The emperor having confided to him an important commission, he became his aide-de-camp, and during the 100 days was put at the head of the topographical bureau. He came to America with La Fayette in 1824, and while in this country he was made chief engineer of the army, in which capacity he rendered great service to the country. He left here as his monuments some admirable works, among them Fort Monroe, at the mouth of James river, in Virginia. Many of the defences of New York also date from his superintendence of the engineers. After the revolution of July he returned to France, and was made aide-de-camp of Louis Philippe. On Sept. 6, 1836, he became minister of war, having been previously made lieutenant-general of engineers. He remained in the ministry until the fall of the cabinet in April, 1837.

BERNARD, SIR THOMAS, an English baronet and philanthropist, born at Lincoln, April 27, 1750, died July 1, 1818. At an early age he went with his father to America, and was educated at Harvard college. He returned to England while still quite young, and was called to the bar in 1780. He married, in 1782, a lady who subsequently became sole heiress of a large property, and during the later years of his life, he devoted himself especially to philanthropic labors, and it was mainly through his exertions that, in 1796, a society for the purpose of improving the condition of the poor was founded in London. By his influence, also, a free chapel for the use of the poor was opened in the quarter of St. Giles, in that city, and the attention of the public was called to the sufferings of the laboring classes and the means of alleviating their miseries. He was also active in the efforts which led to the founding of the "Royal Institution," on the plan of the French academy, and the British institution for the purpose of collecting works of art.

BERNARD, ST., GREAT and LITTLE. See ST. BERNARD.

BERNARD LE TRÉVISAN, an alchemist of Padua, born in 1406, died in 1490, who flourished in society under the title of count de la Marche Trévisane, and who spent his life and

fortune in travels and investigations in search of the philosopher's stone, to the infinite satisfaction of the charlatans and adventurers who abounded in Italy in the 15th century, and who rejoiced in taking advantage of his scientific hallucination. His complete writings, in Latin and French, were published long after his death, in the 16th and 17th centuries, and, although all more or less connected with the philosopher's stone, they are not without some crude scientific theories about chemistry and heat, and were for a long time singularly popular with the adepts of alchemy.

BERNARDIN, SAINT, of Sienna, born at Massa, in Italy, Sept. 8, 1380, died at Aquila, in Abruzzo, May 20, 1444. He became a Franciscan friar, in a monastery near Sienna, in 1404, but desiring to make a pilgrimage to the Holy Land, was appointed a commissary of that country, and thus enabled to gratify his wish. After his return he acquired a great reputation as a preacher, and 8 cities were rival suitors for the honor of having him as a bishop. Bernardin, however, was unwilling to accept the distinction, and was made vicar-general of the friars of the Observantine order in Italy. He is said to have founded more than 800 monasteries. In 1450 he was canonized by Pope Nicholas V. His works appeared at Venice in 1591 in 4 vols. 4to. and at Paris in 1636, in 2 vols. folio. They consist of essays on religious subjects, sermons, and a commentary on the book of Revelations.

BERNARDIN DE ST. PIERRE. See **ST. PIERRE**.

BERNARDINES, monks or nuns of St. Bernard, a branch of the Cistercians, and hence allied to the great Benedictine order. In France the great fame of the Cistercian abbey of Clairvaux, and of its founder and first abbot, St. Bernard, led to the adoption of this name as the common designation of the whole Cistercian order. In Spain it is applied to a congregation of reformed Cistercians founded early in the 15th century by Martin Vargas, or Bargas, and approved by Pope Martin V. They had famous colleges at Salamanca, Alcalá, and elsewhere. In Italy, they owe their establishment to a bull of Pope Julius II., in 1511, by which all the Cistercians of Lombardy and Tuscany were erected into a separate congregation under the name of St. Bernard. In 1497, a bull to like effect had been issued, but soon after recalled, by Alexander VI. In process of time disorders grew up in the brotherhood, and a reform was undertaken about the year 1557, by John de la Barriere, abbot of Notre Dame des Feuillants, in France. Hence arose the Feuillants, who soon spread into Italy, and were there called reformed monks of St. Bernard. The Bernardines include several other reformed congregations, among which are the *Recollects*, the sisters of Providence, and the *sisters of the Precious Blood*.

BERNARDO DEL CARPIO, a popular hero in the romantic literature of Spain. He is said to have flourished at the beginning of the 9th cen-

tury, and to have been the offspring of a secret marriage between the count de Saldafia and the sister of Alfonso the Chaste. The king's wrath, on hearing of this marriage, knew no bounds. He doomed Saldafia to perpetual imprisonment and to cruel tortures, the infant was sent to a convent, while Bernardo was educated as the son of Alfonso and kept ignorant of his birth. The brilliant exploits of Bernardo, ending with the great victory over Roland at Roncesvalles—his heroic efforts to restore liberty to his father, when he learns who his father is—the treachery of Alfonso, who promises repeatedly to release the count, and as often breaks his word, with the despair of Bernardo, and his rebellion against the king and final flight to France, after Saldafia's death in prison, constitute the chief incidents in the hero's life, as represented in about 40 ballads and in the accounts in the "chronicle of Alfonso the Wise." Three plays of Lope de Vega are founded on the romantic career of Bernardo del Carpio, while the best epic on the subject, resembling Ariosto's *Orlando Furioso*, was published in 1624 by the poet Bernardo de Balbuena, under the title of *El Bernardo*.

BERNAUER, Aenza, celebrated for her romantic fate, died Oct. 12, 1485. She was the daughter of a poor citizen of Augsburg, of rare beauty and virtue, and captivated the heart of the young Albert of Bavaria, only son of the reigning duke, who met her at a tournament. She returned his love, and after a secret marriage, he conducted her to one of his castles. His enraged father, discovering this union by the son's refusal to form a more exalted matrimonial connection, caused him to be refused an entrance to the lists at a celebrated tournament at Ratisbon. The prince revenged this indignity, proclaiming Agnes duchess of Bavaria, and gave her a brilliantly appointed household; but, with a sad foreboding of her fate, she prepared a funeral chapel for herself in a neighboring convent. At the death of an uncle, who was tenderly attached to the young duke, the rage of his father broke forth, and by his orders, the beautiful young duchess, during the absence of Albert, was drowned in the Danube. The infuriated son took up arms against his father, and it was long before he could be appeased. At length he was induced to lay down arms, and to marry Ann of Brunswick, but during his lifetime he paid every honor to the memory of the unfortunate Agnes, and their loves have been the favorite subject of many Bavarian poets. Agnes has been made the theme of an opera, by Karl Kreba, which was for the first time performed at Dresden, Jan. 17, 1858.

BERNAY, a city of the French department of Eure, agreeably situated on the left bank of the Charentonne, 25 miles W. N. W. of the town of Evreux; pop. in 1856, 7,287. It is the seat of the greatest horse fair in France, attended by nearly 50,000 persons. It has cloth, woollen, linen, cotton, and paper manufactories,

tanneries, and bleacheries. Bernay has 2 fine old churches, a court of law, a tribunal of commerce, a communal college, a hospital, and interesting remains of mediæval architecture.

BERNBURG, capital of the German duchy of Anhalt-Bernburg, on the river Saale; pop. 10,000; divided into the old and new towns, with the suburb Waldau on the left bank and the Bergstadt on the right bank of the river, which is crossed by a stone bridge. It is the seat of the ducal court. The church of St. Mary is the finest of the 4 churches of the town, which has a gymnasium, a grammar school, a female high school, &c. The trade in corn, fruit, wine, earthenware manufactures, paper, sugar, copper, snuff, iron castings, &c., is stimulated by the branch of the Leipzig-Magdeburg railroad, which passes by Bernburg, on its way to Köthen.

BERNERS, JOHN BOURCHIER, lord, the translator of Froissart's "Chronicles," born 1474, died 1532, the eldest son of Sir Humphrey Bourchier, and related to the royal family through the duke of Gloucester, the youngest child of Edward III. Lord Berners made his début in the political world as member of the 11th parliament under Henry VII., but without any marked success. Under Henry VIII., with whom he was a great favorite, he became chancellor of the exchequer, and afterward governor of Calais. He wrote a comedy, *His in vineam meam*, for the edification of those who attended the cathedral of Calais, where it was usually performed after vespers, and translated various foreign works; but his claims to the notice of posterity rest exclusively upon his translation of Froissart, with which he was charged by Henry VIII. The first volume appeared in 1523 and the second in 1525.

BERNERS, THE LADY JULIANA, an English lady of rank of the 15th century. It is not accurately known to what noble family she belonged, as her name is sometimes written Barnes; and as the lordship of Berners in the reign of Henry VIII. was in the family of Bourchier, which is, of course, the name of the cadets, male and female, of that house. The lady in question was the prioress of the nunnery of Sopewell, near St. Albans, in Hertfordshire; and was either the author or compiler of a work which has many claims to be considered among the most curious and interesting of mediæval literature. In the first place, it is one of the earliest productions of the English press, the first edition bearing date of 1481. In the second, it is to this day, on one of the subjects of which it treats, the art of falconry, or as it was called in old times, the "Mystery of Rivers," the recognized authority of scientific hawkers. The second edition was published in 1486, in the abbey of St. Albans, which probably had authority over, or some connection with, the nunnery of which the lady was prioress. It is entitled "The Boke of Hawkyng and Huntynge, wyth other pleasures dyverse, and also coot-armuries." The edition of 1481 has no treatises on coats-armorial or heraldry. The second is

embellished with a curious wood-engraving of a man angling, that ancient art being included in the "pleasures dyverse." It was afterward reprinted under the title of "The Boke of St. Albans," and became the most popular work, and the manual of field sports, for the space of several centuries. It was not in fact until the 18th century, when the improvement in fire-arms produced a complete change in the forms of hunting and fowling, that it was superseded, in general; although it still continues, as to all the branches of which it treats, and which still exist in their old method unaltered, to be the authority. Many editions were published during the 16th century, and in 1811 a small impression was reprinted as a matter of literary curiosity, by a Mr. Hazlewood.

BERNETTI, TOMMASO, an Italian cardinal and statesman, born at Fermo, Dec. 29, 1779, died March 21, 1852. He was one of the 18 cardinals who refused to attend the marriage of Maria Louisa and Napoleon, and who were called "black cardinals," as the emperor forbade them to wear purple. For 5 years he was detained in Rheims, and returned to Rome on the re-installation of Pius VII. in the Vatican. In 1826 Leo XII. sent him as nuncio to St. Petersburg; Jan. 29, 1827, the cardinal's hat was conferred on him; June 17, 1828, he succeeded Cardinal della Somaglia as secretary of state, and took a prominent part in the conclusion of the concordat with the Netherlands, June 18, 1827, and in the election of Pius VIII. to the Holy See. When the French revolution made itself felt in Italy, and the pope was obliged to call in the aid of the Austrian soldiery, Bernetti proposed the creation of a militia in order to obviate the expense connected with the engagement of foreign troops. This, however, gave offence to the Austrian government, which in 1836 prevailed upon the pope to dismiss the cardinal. When the revolution of 1848 broke out, he escaped from Rome in disguise.

BERNHARD, duke of Saxe-Weimar, one of the most distinguished generals in the 80 years' war, born at Weimar, Aug. 6, 1604, being the youngest of the 8 sons of Duke John of Saxe-Weimar, died at Neuburg on the Rhine, July 8, 1639. At the breaking out of the 80 years' war, he took part with the elector Frederic, king of Bohemia, against the emperor, and achieved great fame in the bloody battle of Wimpfen in 1621, in which Tilly was totally routed. In the autumn of 1623, he entered the Dutch service; in 1625 he assisted Christian, king of Denmark, in the war in Westphalia against Wallenstein, who, after the defeat of the Danish army, in 1628, reconciled him with the emperor. He was one of the first German princes who joined the party of Gustavus Adolphus on his landing, in 1631, in Germany, and distinguished himself in his service in Hesse and on the Rhine in 1632, and joined him in his attack upon Wallenstein's camp at Nuremberg in Aug. 1632. To the military genius of the

duke, the victory was chiefly due at the battle of Lützen, in which, however, Gustavus Adolphus was killed. He claimed from Chancellor Oxenstiern the command of the army and the dukedom of Franconia, and after some hesitation on the part of the Swedish statesman, he was eventually, in 1638, formally installed in this dignity, with the possession of Bamberg and Würzburg. In 1633 he took Regensburg; his attempts to penetrate into Austria were frustrated by Wallenstein, who, however, long weary of his allegiance to the emperor, made treasonable overtures to the duke; but Wallenstein was assassinated, Feb. 15, 1634, and was succeeded in May, 1634, in the command of the army, by the king of Hungary, afterward Ferdinand III., who took Regensburg in July, and totally defeated the Swedish army at the battle of Nördlingen in the autumn of the same year, the duke barely escaping with his life. Unwilling to accede to the peace of Prague, the terms of which were accepted by the majority of the German princes, after the victories of the imperial over the Swedish army, during the year 1635, the duke separated himself from the latter, and resolved to make a treaty on his own account with France. By the terms of this treaty, concluded at St. Germain-en-Laye, Oct. 27, 1635, he was to receive 4,000,000 francs yearly, on condition of furnishing a contingent of 12,000 foot and 6,000 cavalry, and of making a peace with the emperor and his allies without the consent of the king, a secret article securing to him a considerable additional pension, and the possession of Alsace. He was several times obliged to apply in person for the payment of the subsidies, which led to unpleasant personal collisions between himself and the French king. In 1637 he was appointed commander-in-chief of the French auxiliaries and of the German troops, achieving many victories in Lorraine, Burgundy, and Alsace, but for some time was unsuccessful in his attempts upon Swabia and Bavaria. In the latter part of 1638, however, he succeeded, after a desperate siege, in conquering Breisach, which he intended to make in future the centre of an independent principality in Germany. Richelieu, watching with Argus eyes the insatiable ambition of the duke, stopped the supplies, treating the conquest of Breisach as a French conquest made with French money and partly with French soldiers. The duke soon afterward died, as was supposed, by French poison. Crafty as he was, he was outwitted by the superior craft of the cardinal, who did not even respect his dying request in reference to the transmission of the duke's conquests to Germany; these the cardinal appropriated to France, by bribing the officers in command. The only privilege granted to his family was the permission of removing his remains to the vaults of the dukes of Saxe-Weimar, where he was buried in 1655.

BERNHARD, KARL, the pseudonym and recognized name of St. Aubin, one of the most excellent of Danish novelists. Many of his

works are included under the general title of "Pictures of Life in Denmark." He has also written 2 historical romances, "Christian VII. and his Court," and "Christian II. and his Times," and his last work, the "Chronicles of the Time of King Eric of Pomerania," is of a political character. With great power of observation, Bernhard excels in sketches of domestic life, and the delineations of Danish society, which is his principal theme, are both genial and humorous, and given in a very lively and elegant style.

BERNI, FRANCESCO, an Italian poet of the 16th century, born about 1490, of a poor but noble family, at Campo Vecchio, in Tuscany, died July 26, 1536, in Florence. He lived in the latter place in a state bordering on indigence, until the age of 19. He then determined to visit Rome, in the hope of receiving aid from the cardinal Bibbiena, his uncle. In this he was disappointed, and considered himself happy in obtaining the situation of private secretary to the chancellor of Pope Leo X. He now assumed the ecclesiastical habit. Gay and ardent, he sought relief from the austerity of his employer's household in the society of a circle of young ecclesiastics, who devoted themselves to good cheer, wine, pleasure, and poetry. His most celebrated work was the *Orlando Innamorato* of Bojardo, which he re-wrote entirely, correcting the style, and opening every canto with lines of his own. At the sack of Rome, in 1527, Berni lost all that he possessed. He retired to Florence, where he lived for some time, but at last was ruined by the friendship of Alessandro de' Medici, who wished to engage him to poison the cardinal Ippolito de' Medici. On his refusal, Alessandro put an end to his life by poison, in the fear that he might betray him.

BERNIER, FRANÇOIS, a French traveller and philosopher, born at Angers about the year 1625, died at Paris, Sept. 22, 1688. He first studied medicine, but his taste for travelling led him to Syria and also to Egypt, where he had the plague. He afterward went to India, and resided there for 12 years, during 8 of which he was physician to the emperor Aurungzebe. Under the protection of this prince and his ministers, with whom he became a great favorite, he was enabled to visit countries hitherto inaccessible to Europeans. On his return to France, he published his observations, and the information he had collected. A friend of Gassendi, and his most distinguished pupil, he made a summary of the writings of his master, and for the first time presented in French a luminous abridgment of the ideas of this rival of Descartes. He also aided Boileau in the composition of the famous *Arrêt burlesque*, which saved Aristotle and his doctrines from proscription by the parliament of Paris. Bernier was sometimes called the *joli philosophe*. Among his intimate friends were La Fontaine, Ninon de l'Enclos, and St. Evremond.

BERNIER'S ISLAND, an island off the W. coast of New Holland, in lat. 24° 50' S., and long

118° 5' E., near the mouth of Shark's Bay. It is formed of horizontal strata of sand and limestone, containing sea-shells, and is scantily supplied with vegetation.

BERNINA, a peak of the Rhetian Alps, in the canton of Grison, Switzerland, 86 miles S.E. of Chur, famous for its glacier. The pass of that name, between the upper Engadine and the Valteline, is elevated 7,672 feet above the sea.

BERNINI, GIOVANNI LORENZO, an Italian sculptor and architect, born at Naples in 1598, died at Rome, Nov. 28, 1680. When but 10 years old, he was introduced to the notice of Pope Paul V., who recommended him to Cardinal Barberini. He commenced by making busts of the pope and several of the cardinals, of extraordinary merit, but soon gave his attention almost exclusively to architecture, and during the pontificate of Urban VIII. executed the great altar of St. Peter's, the 4 colossal statues of saints, the belfry, and the circular place before the church, beside other works, which gained him honors and emoluments from the pope, as well as a European renown. Commissions flowed in upon him from all quarters; he designed numerous churches, palaces, and public buildings, executed a statue of Charles I. of England, and at the urgent request of Louis XIV., in 1666, travelled in great state to Paris, where he was received with honors seldom bestowed upon an artist, and where, during a residence of 8 months, he executed a bust of the king, and prepared several important architectural plans. His return to Rome was the occasion of another ovation, and during the remainder of his life he resided there, busily occupied in designing and executing great works. The facility with which he executed, and a certain brilliancy and quickness of invention and combination, doubtless explain the extraordinary estimation in which he was held; but that his style or works possess no substantial merit is certain, from the fact that they have never been deemed worthy of imitation by artists.

BERNIS, FRANÇOIS JOACHIM DE PIERRE DE, count of Lyons, cardinal and archbishop of Albi, born May 22, 1715, at St. Marcel, department of Ardèche, died at Rome, Nov. 1, 1794. He was of a noble and ancient, but not wealthy family, and was destined from childhood for the church. In 1735 he went to Paris, having first been appointed canon of Lyons. His pleasing countenance, graceful manners, gay and amiable disposition, together with a ready talent for making verses, soon gained him access to the best circles. He did not, however, obtain any substantial advantages, and his gay life prevented him from finding favor with Cardinal Fleury, and obtaining a benefice. He did not present himself at court until after the death of the cardinal, and then, through the favor of Madame de Pompadour, he was appointed ambassador to Venice. On his return, he was received at court with great considera-

tion, appointed member of his council by Louis XV., and charged with the duty of forming an alliance between France and Austria. The highest favors were the reward of his success. He was appointed minister of foreign affairs, and the king claimed for him the hat of a cardinal. The disastrous consequences of this treaty were, however, imputed to him, notwithstanding his reluctance to conclude it, and he was exiled in 1758 to Soissons, where he remained until 1764, when he was recalled, and elected archbishop of Albi. He received the appointment of ambassador to Rome from the court of France, in consequence of the ability he manifested in the conclave of 1769. The object of this embassy was the suppression of the Jesuits; a measure contrary to his own judgment. In consequence of refusing the oath to the new constitution, he was deprived of his clerical revenues, and reduced to destitution. Through the influence of a friend, he obtained a pension from the court of Spain, which was continued to his death. The light poetry of his youth, although it obtained for him the honor of being made member of the French academy, did him no credit; and even a poem, written later in life, and graver in style, was but little superior.

BERNOULLI, a name made famous by 3 mathematicians of the highest order, and 5 of a less distinguished rank. The family were driven from Antwerp by the bloody cruelties of Philip II., and took refuge first at Frankfurt, afterward at Basel, where **JAMES BERNOULLI** was born, Dec. 25, 1654. He was chosen professor of mathematics there, in 1687, and died Aug. 16, 1705. Elegant in his classical scholarship, and wonderful in mathematical genius, he was also a devout and conscientious man, and won the personal esteem of the savants of France, Holland, and England, during his visits to those countries. His fame rests chiefly on his application of Newton's and Leibnitz's calculus to the subject of curvature and curves, in which he made brilliant discoveries.—His brother **JOHN**, born July 27, 1667, died Jan. 1, 1748, pursued mathematical studies to his eightieth year, and then quietly fell asleep. In 1695 he was appointed professor of mathematics at Groningen, and, in 1705, succeeded his brother in the chair at Basel. Equal to his brother in mathematical power, and as sincere in his good purposes, he attained the highest scientific honors; and the only stain on his memory is from the capriciousness of his temper, which made him jealous and severe to some of his friends, although generous and tender toward others.—His second son, **DANIEL**, born at Groningen, Feb. 9, 1700, died at Basel, March 17, 1782, was the 3d mathematician of the family who attained the highest rank. At the age of 24, he was offered the presidency of a projected academy at Genoa, and the following year was appointed professor of mathematics at St. Petersburg. Returning to Basel, in 1783 (much to the regret of the court at St. Petersburg), he be-

came professor of botany and anatomy, and afterward of natural philosophy. He resigned his post in 1777, and died, like his father, in sleep. His fame rests on his ingenious and successful application of mathematics to questions of a mechanical nature, in astronomy, hydraulics, &c. He and his successor at St. Petersburg, Euler, stand alone in the number of prizes which they obtained from the academy of sciences at Paris.—His elder brother, **NICHOLAS**, born at Basel, Jan. 27, 1695, was appointed professor of mathematics at St. Petersburg, with Daniel, and died July 26, 1726.—**JOHN**, their brother, born at Basel, May 18, 1710, was professor of eloquence in that city 5 years, and in 1748 succeeded his father in the chair of mathematics; was a distinguished and successful mathematician, and died July 17, 1790.—His son, **JOHN**, grandson of the first John, was born at Basel, Nov. 4, 1744, died July 18, 1807. At the age of 19 he was appointed astronomer royal at Berlin. After extensive travels, during leave of absence, he was made director of mathematics in the academy. Before his death he had published valuable works on mathematics, and many other subjects.—His brother, **JAMES**, born at Basel, Oct. 17, 1759, died in St. Petersburg, July 8, 1789. At the age of 21 he assumed the duties of his uncle's professorship of natural philosophy. At 29 he was appointed professor of mathematics in St. Petersburg, where he married a granddaughter of Euler, and in 2 months after marriage died suddenly while bathing in the Neva.—The 5th of these Bernouillis of the 2d magnitude, **NICHOLAS**, was contemporary with the earlier of the first mentioned, a nephew of the first James and John; he was born in Basel, Oct. 10, 1687, and filled a professorship of mathematics at Padua (1716-'22), formerly filled by Galileo. Returning to Basel, he filled successively the chair of logic and that of law, and died Nov. 29, 1759.—**JEROME**, a member of the same family, born at Basel, in 1745, died in 1829, was distinguished as a naturalist and mineralogist. He was for a time president of the council of his native canton.

BERNSTORFF, **CHRISTIAN GÜNTHER**, count, a Danish diplomatist, born at Copenhagen, April 3, 1769, died at Berlin, March 28, 1835. After having been ambassador in Berlin and Stockholm, he was appointed minister of foreign affairs in 1797. He followed the policy of neutrality, and went on a diplomatic mission to London in 1801, but could not prevent a bombardment of Copenhagen by the English in 1807. He was ambassador to Paris in 1811, represented Denmark in the congress of Vienna, and signed the cession of Norway to Sweden in 1815. In 1818 he passed into the service of Prussia.—**JOHANN HARTWIG ERNST**, count of, a Danish statesman, called by Frederic the Great, "the oracle of Denmark," born in Hanover, May 13, 1713, died in Hamburg, Feb. 19, 1772. In 1782 he was Danish ambassador in Saxony, in 1787 at the imperial diet at

Ratisbon, in 1744 was sent to Paris, and in 1751 was prime minister. In 1770 he lost the favor of Christian VII., through the ascendancy of Struensee, was thrown out of employment, and retired to Hamburg. Having brought about the downfall of Struensee, he was recalled to Copenhagen, but died just before setting out.

BERCEA, a city of ancient Macedonia, lying south of Thessalonica, at the foot of Mount Bermius. It was founded, according to tradition, by the Macedonian princess Bercea. During the Peloponnesian war it was taken by the Athenians. After the battle of Pydna, it was the first to surrender to the Romans. Saint Paul preached the gospel here A. D. 49-65, and met with a reception which is commended in Scripture. Occupied by the Slavonians, and then by the Bulgarians, it was almost ruined by an earthquake in 904. In 1204, it formed a part of the Latin kingdom of Thessalonica. It fell under the power of the Turks in 1397, and during the middle ages became known by the name of Veria.

BEROSUS, a priest of the temple of Belus, 276 B. C. He wrote a history of Chaldea, cited by Josephus and other ancient writers. An edition of his fragments was published by Richter (Leipzig, 1825), and by Didot (Paris, 1848).

BERRIEN, a south-western county of Michigan, with an area of about 600 sq. m. It is drained by the St. Joseph's, Pawpaw, and Galien rivers, the first of which is here navigable for keel-boats. The surface is undulating and the soil of various qualities. Near the St. Joseph's it is remarkably fertile, and consists of a deep, black, sandy loam, overgrown with thick forests of hard timber. The agricultural products in 1850 amounted to 224,306 bushels of corn, 88,289 of wheat, 78,600 of oats, 59,158 of potatoes, and 6,165 tons of hay. There were 15 churches, 8 newspaper offices, and 4,082 pupils attending public schools. The Central railroad intersects the county. Pop. 11,417. Capital, Berrien.

BERRIEN, **JOHN MACPHERSON**, an American lawyer and statesman, born in New Jersey, Aug. 23, 1781, died at Savannah, Ga., Jan. 1, 1856. He was the son of an officer in the war of the American revolution, graduated at Nassau Hall in 1796, was admitted to the bar of Georgia at the age of 18, and gradually rose in reputation till he was ranked among the most able lawyers in the country. He was elected in 1809 solicitor of the eastern district of Georgia, became judge of the same district the next year, retaining the latter office till 1822, when he became a member of the Georgia senate, from which he was transferred in 1824 to the senate of the United States. He established in that body a high reputation as an orator and statesman, was appointed attorney-general of the United States in 1829, resigned this office in 1831 when Gen. Jackson's cabinet became inharmonious, resumed the practice of his profession in Savannah till 1840, when he was elected again to the na-

tional senate, and was reflected in 1846. He left a reputation for consistency and eminent ability in public life.

BERRY, a succulent fruit, having its seeds lying loosely among pulp. The gooseberry and the currant are genuine berries, but aloe and plums, hips and haws, are not admitted in this definition of a berry, by botanists, although commonly called berries in popular language. According to Prof. Lindley, a berry is a succulent or pulpy fruit, containing naked seeds; a pulpy pericarp or seed-vessel without valves, containing several seeds which have no covering but the pulp or rind; mostly round or oval.

BERRY, or BERRI, an ancient province of France, now forming the departments of Indre and Oher, together with a small part of Loire-et-Oher, Nièvre, Creuse, and Allier. It was divided into Le Haut Berry and Le Bas Berry, the former lying between the Oher and the Loire, and the latter S. W. of the Oher. Greatest length 100 miles; greatest breadth 90 miles. The chief rivers are the Loire, Oher, Indre, and Creuse, the banks of which are generally fertile, but elsewhere the land is either sandy, marshy, or covered with heaths. There is plenty of timber, good pasturage for cattle, and a superior breed of sheep. Coal, iron, ochre, marble, and building stone are abundant. Berry comprises the greater part of the territory anciently held by the *Bituriges Cubi*, who were styled by Livy, the chief people of Celtic Gaul, and are described as having been far advanced in civilization before the time of Christ. They were conquered by Cæsar, and remained under Roman rule until about the year 476, when their country was invaded by Euric, king of the Visigoths. Clovis united it to France in 507, and it was afterward governed by counts who took their title from Bourges, the capital city. Under Charles the Bald it became independent, and the title was made hereditary. The last count of Bourges, Eudes Arpin or Herpin, took the cross in 1094, and on his departure for Palestine sold the earldom to King Philip I., who made it an appanage of the princes and princesses of the blood. John the Good erected it into a duchy in 1360, and for a long period it was held by members of the royal family, although since the time of Henry IV., the title has been purely nominal. The last duke of Berry, the younger son of Charles X., was assassinated Feb. 18, 1830. During the religious and political disturbances which at different times have agitated the empire, Berry has generally borne a conspicuous part. In the Norman invasion, the wars against the English, and the religious struggles, it suffered greatly. In the great revolution of 1789 its losses were comparatively few, but in 1848 it was the theatre of considerable disorders.

BERRY, AGNES and MARY, two sisters celebrated for their relation with Horace Walpole, who met them in the winter of 1787, and who became fascinated by the varied attainments of the ladies. They were the daughters of a

Yorkshire gentleman of fortune, and distinguished alike for grace of person and beauties of mind. Mary, born in 1762, died Nov. 20, 1852, was an accomplished scholar. Agnes, the elder sister, died in May, 1851, was a proficient in the fine arts. The ladies were flattered by the statesman's attention, and although he was very advanced in years, they formed a Platonic attachment for the "forlorn antique of 71," which resulted in an interchange of letters, and in repeated visits which the 2 sisters paid to their veteran lover at Strawberry Hill. "Walpole," says an English critic, "was fond of his 2 wives, as he called them, would write and number his letters to them, and tell them stories of his early life, and what he had seen and heard, with ten times the vivacity and minuteness that he employed in telling similar stories to Pinkerton or Dalrymple." In 1797, the 2 sisters published, in connection with their father, an edition of Walpole's works in 5 vols. Mary Berry brought out in 1844 a collection of her own writings in 2 vols. 8vo, entitled "England and France," "Life of Rachel, Lady Russell," and "Fashionable Friends," a comedy. Subsequently she wrote a "Vindication of Macaulay's Character of Horace Walpole." The publication in 1840 of the letters of Walpole to herself and to Agnes, proved the most popular of their literary enterprises.

BERRY, CHARLES, duke of, the 8d son of Louis, dauphin of France, and of Maria Christina, of Bavaria, grandson of Louis XIV., born Aug. 31, 1686, died May 4, 1714. He was never noted, except for having married, when 24 years old, MARIE LOUISE ELIZABETH, of Orléans, duchess of Berry. This most notorious princess, daughter of Philippe, regent of France, born Aug. 20, 1695, died July 21, 1719. From her early youth, she indicated in her deportment and temper a strange combination of the profligacy of a courtesan with the pride of a royal princess. She had been married but a few months, when she threw off all restraints, and made herself conspicuous by the corruption of her morals in a court where corruption was the rule. Without entering into the details of her long series of love intrigues, which embrace persons of all ranks and nearly all ages, we are constrained to mention at least the most important in politics, and the most criminal in morals. One of the equerries of her husband, named Delahaye, seems to have been the first object of the brief, but impetuous passions, which more than once, it is said, found their satisfaction even among private soldiers. So utterly destitute of moderation was her love for Delahaye, that she proposed to run away with him. But the equerry prudently declined acceding to such a plan, and soon after, the duchess entertained new fancies, the best known and most important of which is her intrigue with Riom. This person was an officer of the guards, a nephew of that celebrated Lauzun, who, after the most extraordinary career, had married the great Mlle. de Montpensier. It seems that the

example of the uncle had inspired the nephew in more than one respect, for the latter began to treat his mistress even worse than the former had used his wife. In a word, the officer beat the princess, who found this discipline attractive enough to marry Riom secretly, as soon as she got rid of her husband. The duke of Berry died very suddenly at Marly, and the event gave rise to the most serious suspicions against the duchess. The intrigue with Riom was not in fact the only interest favored by the death of the duke. The incestuous intercourse between the duchess and her own father, the regent, was now no secret, being carried on publicly, to the scandal even of that licentious court. The memoirs of that time agree as to this revolting intrigue, into which the duchess had been led, less by an unnatural passion than by certain ambitious schemes, for the accomplishment of which she needed to exert an unbounded influence over the regent. Still, if she succeeded in the shameful means, she failed in the final result, and was never invested with that sovereign power which she so unscrupulously sought. Having been secretly confined, and being particularly anxious to conceal the fact, she offered to her father a great festival, in order to disconcert all suspicion. Scarcely able to leave her bed, she still exposed herself boldly to the fresh air of a spring night, and to the fatigues of a protracted entertainment. This last imprudence proved fatal. Being seized with fever, she left the illuminated gardens of Meudon to return to her bed, where she died soon after of pleurisy. She was then only 24 years old, but in so short a time, she had exhausted passions and practised vices enough to disgrace a century, "having never ceased," says St. Simon, "to combine with the tastes of a Messalina, the ambitious cares of a woman who felt herself called to govern men, without doubt because she despised them as much as they despised her."—CHARLES FERDINAND, duke of, 3d son of the count of Artois, afterward Charles X., and of Marie Thérèse, of Savoy, born in Versailles, Jan. 24, 1778, assassinated at Paris, Feb. 18, 1820. In 1789 he emigrated with his father, and for 9 years served in the army of Condé. In 1798 he went to Russia, but 8 years later he took up his residence in England, where he led a comparatively quiet and obscure life. There he married secretly an English lady, by whom he had 2 daughters. This marriage was afterward cancelled for political reasons, when the prince returned to France in 1814. He landed at Cherbourg, and at once produced a favorable impression. The abrupt frankness of his manners, and his military habits, won the sympathies of the people, and were even welcome with the army. He had the command of all the troops in and around Paris, with the title of colonel-general of the dragoons, but when Napoleon returned from Elba, he could do nothing but follow Louis XVIII. to Ghent, where he remained till after the battle of Wa-

terloo. On his second return to France the natural independence of his temper was unchanged. He kept aloof from all political coteries and intrigues, and after his marriage, the happiness of his home, the liberality of his ideas, as well as his freedom from all revengeful feelings, preserved him from these excitements. It was far more congenial to his temper to bestow a noble protection upon arts and literature. This contrast with the rest of his family had made him personally popular in France. The assassin, named Louvel, a fanatical Bonapartist, was employed as a saddler in the king's mews. He denied to the last having any accomplices, although the probabilities remained to the contrary. His actual motive, according to his own statement, was to strike to death the Bourbon dynasty in the person of its only member who could perpetuate the race. In fact, the duke of Berry had only one daughter, Louise of Bourbon, Mademoiselle, born Sept. 21, 1819, who was unable to succeed to the crown, by virtue of the Salic law. The unfortunate prince was leading his wife to her carriage at the door of the opera, when he was mortally stabbed in the right side. He was carried into a parlor belonging to the administration of the theatre, where he expired at 6 o'clock in the morning of Feb. 14, surrounded by his family, the high officers of the state, and the old king himself. The last words of the victim were to ask pardon for his murderer, who had after all partially failed in his atrocious purpose, as the duchess was then in the second month of her pregnancy, and gave birth to a son 7 months afterward.

BERRY, MARIE CAROLINE FERDINANDE LOUISE, duchess of, daughter of Francis I., king of Naples, and of Maria Clementina, archduchess of Austria, born in Palermo, Nov. 5, 1798. When but little over 17 she was married by proxy to the duke of Berry, and soon after arrived in Paris, where she at once became popular by the generosity of her heart, the liveliness of her mind, and her fondness for art, literature, and pleasure, all qualities particularly congenial to the temper of the French people. As it happened that her husband had the same natural propensities, they lived together in mutual affection, but little troubled by political cares. On Sept. 21, 1819, she gave birth to a daughter, and, in the following year, she was pregnant when her husband was assassinated in the night of Feb. 18. Seven months after that dreadful event, she was delivered of a son, whose destiny seemed to be to succeed to the crown of France; but Providence had decided otherwise. In 1830, after a long parliamentary contest between the crown and the middle classes, the revolution of July broke out. In the midst of the bloody contest, conscious of her popularity, and well aware of the decisive influence that she might exert on the final result, she resolved to leave the Tuileries, and to go to the Hotel de Ville, the head-quarters of the insurgents. There she

intended to trust her son as their king to the loyalty of the people. This bold step might have changed the history of France, especially as several of the most influential citizens, dreading the consequences of a complete overthrow of the throne, were prepared to proclaim the young duke of Bordeaux as Henry V., and pacify the people, who had taken up arms at first more against an unpopular administration, than against the reigning dynasty. The duchess might thus have saved for her son the crown, which was falling from the head of the old king. But the blind obstinacy of the family destroyed this last chance. As the young duchess insisted with great energy on the execution of her design, and did not seem to be disposed to yield to moral opposition, the old king had recourse to material restraint. The mother of the presumptive heir of a tottering crown was put under arrest, and kept prisoner in her own apartments. Soon after, all was lost, and no other alternative was left to her but to follow the Bourbon family into exile. She did not remain long with them at Holyrood, where they took refuge, and, in the following year, she went to reside at Sestri, in Sardinia. From the very moment of leaving France she was resolved to return, and to attempt all means of restoring her son to the throne. The new government, in its unsettled condition between the yet powerful body of the legitimists and the fast-growing republican party, was specially uneasy about the threatening plots of the only member of the exiled family who had any claims on the popular sympathy, and showed energy enough to take advantage of it. By diplomatic pressure, they prevailed upon the king of Sardinia to expel the duchess from that country. Wounded in her feelings, but submissive to necessity, she went to Modena, where she was affectionately received, and thence to Rome, where she soon became the centre of active political intrigues. Those members of the legitimist party, who dreamed of a restoration by means of civil war, were busy around the duchess, whose ideas agreed but too well with theirs. Men of experience were not wanting who did their best to dissuade her from a rash enterprise of which the only possible result would be a useless waste of blood in Vendée and Brittany. Deceived by erroneous reports and groundless hope, she left Massa, April 21, 1832, and landed secretly on a point of the French coast, where she had to pass the first night in the open air, wrapped up in a cloak, without any followers but M. de Mesnard and M. de Bourmont. In the mean time, a movement attempted by her partisans in Marseilles failed entirely, and should have been a warning against any further step. Still, instead of reëmbarking, as she might have done without any serious difficulty, she resolved to seek in the west of France that fortune which she had not found in the south, and through imminent dangers and extraordinary incidents, she succeeded in reaching Vendée. Before

arriving at Montpellier, in order to escape arrest, she boldly presented herself to the mayor of the commune, who, she was informed, was a thorough republican. "Sir," said she, "I am the duchess of Berry; I am going to Vendée to try the chances in favor of my son. I know what are your political opinions; but I trust in your honor, and I come to ask you to assist me in continuing my journey." The answer was what the adventurous heroine had expected, and she entered the city in the wagon of the republican mayor, himself driving. She stopped one day in Toulouse, and made her entrance into Bordeaux in an open barouche by broad daylight. But to penetrate into Vendée, where she was more closely watched, she had to disguise herself in the garments of a peasant woman. Her first proclamation to call the legitimists to arms, issued in the name of Henry V., was dated May 19. She met immediately with a strong and decided opposition from many of the most influential men of the party. In Paris, especially, they disapproved this untimely insurrection against a government which had in hand all the means of suppressing it. Berryer, one of the most renowned among the leaders, waited on the duchess, and respectfully but earnestly insisted upon her desisting from the fatal enterprise. All was in vain. The insurrection, adjourned for a few days by a counter-order from Marshal Bourmont, broke out June 4, the very same day when the republican party made a similar attempt in Paris, and desecrated the funeral of Gen. Lamarque by bloody riots. The first fight of the legitimists in Vendée took place near Visille-Vigne, and is known as the *combat du chêne*. During the firing, and without fear of the bullets, the duchess who was on the spot attended to the wounded; but the odds were against her, and in the defeat of her followers, she was so near being taken prisoner, that it was only by exchanging her horse for M. de Charette's that she could escape. After the equally unsuccessful result of some other encounters in which her devoted partisans fought bravely, she gave up all hope of overthrowing or even endangering the established government, and sorrowfully confined herself to the care of her personal safety. Driven from place to place by the columns of troops on her footsteps in every direction, she took refuge in the city of Nantes, where she entered on a market day, as a country-woman, barefooted and carrying a basket of eggs and vegetables, followed at a distance by M. de Mesnard and Mlle. de Kersabiec. A safe asylum had been prepared for her in the house of 2 unmarried ladies of the name of Du Guigny, and there for the first time for many days, she could enjoy rest in spite of the efforts of the government to effect her capture. About that time a German renegade Jew, of the name of Deutz, presented himself to the ministers, and proposed a shameful bargain for the delivery of the proscribed duchess. By dint of base and hypocritical steps, he had previously succeeded

in being introduced to the duchess when in Rome, in the preceding year. He had obtained her protection and confidence by feigned religious and political devotion, and she had been imprudent enough to trust all her secrets to him, although it had been suspected, not without good reasons, that even then he was a secret agent of Louis Philippe. Whatever may have been his real character in Rome, he now appeared in Paris for the purpose of betraying his benefactress. Among the members of the cabinet, M. Thiers eagerly acceded to the proposals of Deutz, discussed the price of the treason, and when the bargain was concluded at 1,000,000 francs, according to some authorities, or, what is more probable, at half of that sum, according to some others, the traitor left for Nantes, in company with an agent of the secret police, of the name of Joly. So close had the transaction been kept, that nobody suspected it among the most distrustful friends of the duchess. Without any great difficulty, Deutz succeeded in ascertaining where she was; he was even admitted to visit her in her asylum, and at once gave all the information to the authorities. Suddenly the house of the Mlles. Du Guigny was surrounded by a large body of troops, dispersed in such a way as to prevent escape. The inside was invaded, searched with the greatest minuteness, and the duchess was not found. Still the most positive information left no doubt about her presence in the house at the time it was entered, and the possibility of escape was out of the question. For 86 hours every room, closet, and corner, was occupied by the soldiers, gendarmes, and policemen. The most liberal offers made to the 2 humble female servants of the Mlles. Du Guigny, to the extent of a table covered with gold, to tempt their fidelity, were of no avail, and the prefect announced his determination to destroy the entire house, stone by stone, rather than give up the pursuit. At last, 2 gendarmes posted in an attic room, having kept up a fire in the chimney to preserve themselves from the cold of an autumn night, heard to their utter astonishment a feminine voice ordering the fire to be put out, and announcing that the duchess of Berry was ready to surrender. There she had been in fact concealed with Mlle. de Kersabiec, M. de Mesnard, and M. Guibourg, 4 persons, in a space less than 4 feet long by 2 wide, in the angle of the walls behind the fire-place. This long and sharp trial she had borne with the most extraordinary bravery, endurance, and even gayety. As she was the last to crowd into the place, she found herself close by the hot iron plate of the chimney, and several times, half suffocated by the want of air, she had to extinguish with her own hands the flames communicated to her dress by the burning contact. She was at first imprisoned in the castle of Nantes, and subsequently transported to the citadel of Blaye. The royal court of Poitiers had already issued an indictment against the duchess to ap-

pear at the assizes of the department of Vendée. This was quashed without any legal authority, by her imprisonment without judgment in Blaye. In fact, it was neither more nor less than the actual restoration of the *lettres de cachet*, abolished by Louis XVI. The liberal legitimists and republicans were unanimous in protesting against the proceeding through all the channels of publicity, newspapers, magazines, and pamphlets. Numerous petitions were addressed to the chamber of deputies, which ought to have been the natural guardian of the public rights and protector of the law. A report was presented Feb. 5, 1838, and in answer to the reclamations founded on common justice, M. de Broglie, a minister of the *doctrinaire* school, put forward some general considerations of propriety and public tranquillity, and devised an indefinite rule of action from the circumstances. The chamber, apparently satisfied, passed to the order of the day. About that time rumors began to circulate, first among the people, and soon after in the press, to the effect that the prisoner of Blaye was pregnant, and even near her confinement. The most violent discussions arose at once everywhere in France, and soon led to many duels, which an insignificant although official report from Messrs. Auvity and Orfila as physicians, sent to Blaye by the government, did not silence. What Louis Philippe and his cabinet wanted was to publicly disgrace the duchess, and for this purpose no means seemed unworthy. Col. Chousserie, a brave and gentlemanly old soldier of Napoleon, who at first had the command of the citadel, tendered his resignation rather than obey his private instructions, which he thought utterly incompatible with his honor as a soldier and his delicacy as a man. Gen. Bugeaud, however, attempted the part refused by his predecessor, and so devotedly performed it that on Feb. 23, the ill-treated princess, in order to escape incessant persecutions, signed the following declaration: "Urged by circumstances, and by the measures ordered by the government, although I had the most serious reasons for keeping my marriage secret, I owe it to myself and to my children to declare, that while in Italy, I secretly married the count of Lucchesi-Palli, one of the princes of Campo-Franco." This document was immediately published in the *Moniteur*. A loud cry of indignation from all sections of the opposition answered to this act of coercion. Fresh protests were presented to the chamber of deputies, but were rejected by the majority. Nor did the declaration suspend the work of the tormentors, till on May 10, the duchess gave birth to a daughter, when the presence of all the public officers as witnesses was forced upon her by Bugeaud, the ever unscrupulous soldier, whose ambition contemplated only the future reward promised to his zeal.—So ended the political career of the duchess of Berry. June 8, she was set at liberty, as illegally as she had been put in prison,

and a French frigate transported her to Palermo. This episode of modern history had a worthy epilogue but 2 days after the departure of the duchess. A violent discussion arose in the chamber of deputies, when M. Thiers, mounting the tribune, made the following bold declaration: "We are accused of having violated the common law. I confess it. The arrest, the imprisonment, the release, all has been illegal. Well, where is then the excuse for our conduct? It is in the very frankness of our conduct." The majority applauded. From that time the duchess of Berry has lived retired from the political arena, and has confined herself to the quiet enjoyments of domestic life with her husband, the count Lucchesi, who has since inherited the title of Duke Della Grazia, surrounded by 4 children born of her second marriage, exclusive of the one that died soon after her release from Blaye. She resides part of the year in Venice, where she owns the beautiful Vendramin palace, and part of the year in her princely castle of Brunsee, in Styria. The concourse of friends who visit her constantly, proves that even after so many years, she is still popular among many of the French people, who either admire the heroic qualities displayed by her as the mother of a pretender, or sympathize with the womanly graces characteristic of her private life.

BERRYER, ANTOINE PIERRE, a French advocate and politician, born in Paris, Jan. 4, 1790. The political trials which took place after the second restoration brought him into public notice. He aided his father and the elder Dupin in the useless defence of Marshal Ney, while he alone was intrusted with that of Cambronne and Debelle. The former was acquitted; the latter having been sentenced to death, the young advocate went to the king, and succeeded in obtaining his pardon. His practice became extensive, and in 1830 he was elected deputy from the department of Haute Loire, and took a conspicuous part in the debates preceding the revolution of July. After the flight of Charles X., Berryer, in opposition to all the members of his party, retained his seat, in the chamber of deputies, where, though the only remaining representative of the fallen monarchy, he supported the most liberal measures. In 1832, when the duchess of Berry came to France to raise a rebellion among the Vendéans, he went to the princess to dissuade her from it. He was arrested as an accomplice in the undertaking he had opposed; but the charge was abandoned. In 1836 he strenuously but vainly opposed the restrictive measures of the government. On the question of voting 25,000,000 francs, to satisfy the claims of the United States, he made a powerful and successful speech against the bill. He held his position as leading orator in the assembly till the fall of Louis Philippe. Being elected to the constituent and legislative assemblies, he did not hesitate to manifest openly his monarchical predilections, and declare that a

republican system of government was entirely repugnant to the interest, manners, and traditional opinions of the French nation. He opposed the government of Louis Napoleon; and on the *coup d'état* of 1851, was vehement in denouncing him as a usurper. Since then, he has abandoned politics for the law. He was elected to the French academy in 1852. We must add the fact, that Berryer is a spend-thrift; and that, notwithstanding the profits of his large practice, he has been several times under the necessity of accepting large sums of money, contributed by his party, to relieve him from pecuniary difficulties.

BERSERKER (Scand. *ber*, bare, and *serkr*, a coat of mail), in Scandinavian mythology, a descendant of the eight-handed Starkader and the beautiful Alphilde. He was a mighty warrior who fought without coat of mail or helmet, contrary to the custom of his time. His rage supplied the place of armor, whence his name. He married the daughter of king Swafuriam, whom he had killed in battle, and had by her 12 sons, as ferocious as himself.—The name was also applied to the possessed champions of the ancient Scandinavians. There is something extraordinary and incomprehensible in what is related of these persons, in some respects analogous to what we read in the Holy Scriptures concerning the *εργουμενοι*, or possessed of devils, to the understanding which neither experience nor science furnishes any clue. These Berserkers were persons, who at times were liable to uncontrollable fits of martial frenzy, during the occurrence of which they could perform the most extraordinary feats of strength and agility, far beyond their ability to attempt at any other period. They foamed at the mouth, bit through iron shields, broke maces of iron with their bare hands, snapped spears and sword-blades like pipe-stems or pieces of glass, set assaults, tortures, and even mortal wounds at defiance, and, if not invulnerable, appeared to be exempt from death, until at least the moment when the fit, or whatever it was, passed away; when they were not only as other men, but were so exhausted, so entirely prostrated and debilitated by the effects of the reaction, that they could be managed and controlled by a weak woman or an infant. Whether it was merely an abnormal state of excitement produced by the maddening effects of excessive drinking, and by stimulating the nerves by howling and frantic exercises into a semi-cataleptic state, like that superinduced by the orgies of the howling and dancing dervises; or whether it was some unknown nervous seizure, rendering for the moment the mind impassive to fear and the muscular body insensible to pain, is not now to be ascertained; but it is clear from all the accounts of contemporaneous writers, who mention it as a thing of course, and as no subject for wonder, that it was neither an exaggerated account of ordinary occurrences, nor an invention of the priests and apostles of a false religion.

BERTAUT, a French violoncellist, whose Christian name has not been preserved, and whose family name also is uncertain, being spelled by some Berthaut, and by others Bertault, the first who raised the instrument to the dignity of a science in France, born at Valenciennes at the beginning of the 18th century, died 1756. He possessed a fine voice and excelled upon the violoncello. His manner of performing upon this instrument was diffused over France by his pupils, Cupis, Duport the elder, and the two Jansons. When Bertaut did not sing or play upon the violoncello, he paid homage to Bacchus, and frequently his exploits in that department interfered with the full development of his musical genius.

BERTHA, a legendary name derived from the *Berchta* and *Perahita* of pagan times, and applied to celebrated women of the middle ages, as, for instance, St. Bertha, the beautiful and pious daughter of King Charibert of Paris, married in 560 to Ethelbert, king of Kent, whom she converted to Christianity, and, on account of her missionary services among the Anglo-Saxons, canonized by the see of Rome, which fixed her anniversary upon July 4. Again, we find in the poetry of the middle ages, a lady of the name of Bertha, or "Berthrada with the large foot," as with more truth than gallantry she was called, who figured as the daughter of Count Charibert of Laon, wife of Pepin the Small, and mother of Charlemagne. In 1822, Mr. Paulin Paris discovered an old poem, of which this lady (who died at Choiseul, July 12, 783, and was buried at St. Denis) was the theme, and which bears the title of *Berte aus grans pies*. A sister of Charlemagne, who married Milo d'Angleris, and became the mother of Roland, also appears in the poetical literature of the day under the name of Bertha. But the most celebrated among the Berthas was the daughter of Burchard, duke of the Allemanni, and queen of Rudolf II., the king of Swiss Burgundy, who, after his death in 937, was regent during the minority of her son Conrad, and subsequently married King Hugo of Italy. Queen Bertha, who died toward the end of the 10th century, was, like her namesake the old pagan divinity Berchta, a singularly thrifty housekeeper, and is represented upon monuments, coins, seals, as sitting upon her throne with a distaff in her hand. It is probable that, with the spread of Christianity, pagan emblems were in this manner transferred upon Christian monuments; but there is no doubt about the fact that many high-bred ladies of the 10th century were much addicted to household duties. Whenever Italians wish to express in a strong manner their regret at the changes which have come upon something good in the past, they say: *Berta non fila piu*; and the Germans' less pointed and laconic proverb, *In der guten alten Zeit, wo die Königin Bertha spann*, comes in the same manner from good Queen Bertha and her love for the distaff.

BERTHELDSDORF, a village of Saxony, 18

miles S. E. of Bautzen, where the central conference of the sect of Herrnhuter Christians is held.

BERTHIER, a western county of Canada E., with an area of 9,590 sq. m. It borders on the St. Lawrence, and is drained by Assumption river. In its N. E. part is Lake Maskinonge, a sheet of water about 4 miles long and 3 miles wide. A river of the same name rises in this lake and flows into the St. Lawrence. In 1852 Berthier produced more flax, oats, and tobacco, than any other county of Canada E. These productions, together with fabrics of wool and linen, form its chief staples. Pop. 84,608; chief town, Berthier-en-Haut.

BERTHIER, FERDINAND, a deaf mute, eminent as a teacher and author, was born at Louhas, near Macon, department of Saône et Loire, France, about 1801. He entered the national institution for deaf mutes, at Paris, at an early age, and was a pupil of M. Laurent Clerc. He was while quite young appointed an instructor there, and has risen from one position to another till he is now the dean of the institution, and one of the most eminent teachers of the deaf and dumb on the continent. He has written a very interesting memoir of the abbé de l'Épée, as well as several other works.

BERTHIER, LOUIS ALEXANDRE, marshal of France, prince and duke of Neufchâtel and Valengin, prince of Wagram, born at Versailles, Nov. 20, 1758, murdered at Bamberg, June 1, 1815. He was educated as a soldier by his father, the chief of the corps of topographical engineers under Louis XVI. From the topographical bureau of the king, he passed to active service, first as lieutenant in the general staff, and subsequently as a captain of dragoons. In the American war of independence he served under Lafayette. In 1789, Louis XVI. appointed him major-general of the national guard of Versailles, and on Oct. 5 and 6, 1790, as well as Feb. 19, 1791, he did good service to the royal family. He perceived, however, that the revolution opened a field for military talents, and we find him, in turn, the chief of the general staff under Lafayette, Luckner, and Oustine. During the reign of terror he avoided suspicion by exhibiting zeal in the Vendean war. His personal bravery at the defence of Saumur, June 12, 1795, secured an honorable mention in the reports of the commissaries of the convention. After the 9th Thermidor, he was appointed chief of the general staff of Kellermann, and by causing the French army to take up the lines of Borghetto, contributed to arrest the advance of the enemy. Thus his reputation as a chief of the general staff was established before Bonaparte singled him out for that post. During the campaign of 1796-'7, he also proved himself a good general of division in the battles of Mondovi (April 22, 1796), Lodi (May 10, 1796), Codogno (May 9, 1796), and Rivoli (Jan. 14, 1797). Of a weak character, of a tenacious activity, of a herculean strength of constitution, which allowed

him to work during 8 consecutive nights, of a stupendous memory for every thing respecting the details of military operations, such as movements of corps, number of forces, cantonments, chiefs; of a promptitude always to be relied upon, orderly and exact, well versed in the use of maps, with an acute appreciation of the peculiarities of the ground, schooled to report in simple and lucid terms on the most complicated military movements, sufficiently experienced and quick-sighted to know on the day of action where to deliver the orders received, and himself attending to their execution, the living telegraph of his chief on the field of battle, and his indefatigable writing machine at the desk, he was the paragon of a staff officer for a general who reserved to himself all the superior staff functions. Despite his remonstrances, Bonaparte placed him, in 1798, at the head of the army destined to occupy Rome, there to proclaim the republic, and to take the pope prisoner. Equally unable to prevent the robberies committed at Rome by French generals, commissaries and purveyors, and to arrest the mutiny in the French ranks, he resigned his command to the hands of Massena, and repaired to Milan, where he fell in love with the beautiful Madame Visconti; his eccentric and lasting passion for whom caused him during the expedition to Egypt to be nicknamed the chief of the *faction des amoureux*, and cost him the best part of the 40,000,000 francs successively bestowed upon him by his imperial master. After his return from Egypt, he seconded Bonaparte's intrigues on the 18th and 19th Brumaire, and was appointed minister of war, a post he occupied till April 2, 1800. Acting again as chief of the general staff during the second Italian campaign, he contributed somewhat to the apparently false position in which Bonaparte had placed himself at Marengo, by crediting false reports as to the route and position of the Austrian army. After the victory, having concluded an armistice with Gen. Melas, he was employed on several diplomatic errands, and then reinstated in the war ministry, which he held till the proclamation of the empire. He then became completely attached to the person of the emperor, whom, with the title of major-general of the grand army, he accompanied as chief of the general staff during all his campaigns. Napoleon showered titles, dignities, emoluments, pensions, and donations upon him. May 19, 1808, he was created marshal of the empire, grand cordon of the legion of honor, grand huntsman of France. Oct. 17, 1806, he had the honor of stipulating with Mack the terms of the capitulation of Ulm. From the Prussian campaign of 1806, he carried home the dignity of sovereign prince of Neufchâtel and Valengin. In 1808 he was ordered to marry the princess Elizabeth Maria of Bavaria-Birkenfeld, the king of Bavaria's niece, and was made vice-constable of France. In 1809, Napoleon placed him as general-in-chief at the head of the grand army destined to

operate from Bavaria against Austria. On April 6 he declared war, and on the 15th had already contrived to compromise the campaign. He divided the army into 8 parts, posting Davoust with half of the French forces at Regensburg, Massena with the other half at Augsburg, and between them, at Aversberg, the Bavarians, so that by quickly advancing, the archduke Charles might have vanquished these corps singly. The slowness of the Austrians and the arrival of Napoleon saved the French army. In his more congenial functions, however, and under the eyes of his master, he rendered excellent service in this same campaign, and added to his long list of titles that of prince of Wagram. During the Russian campaign he broke down even as chief of the general staff. After the conflagration of Moscow he proved unable even to interpret the orders of his master; but in spite of his urgent request to be allowed to return with Napoleon to France, the latter ordered him to stay with the army in Russia. The narrowness of his mind and his devotion to routine were now fully illustrated in the midst of the fearful odds against which the French had to struggle. True to his traditions, he gave to a battalion, sometimes to a company of the rear-guard, the same orders as if that rear-guard was still composed of 80,000 men; assigned posts to regiments and divisions which had long ceased to exist, and, to make up for his own want of activity, multiplied couriers and formulas. During the years 1813-'14 we find him again at his usual post. After the deposition of Napoleon had been proclaimed by the senate, Berthier, under false pretences, slunk away from his patron, sent in his own adhesion to the senate and the provisional government, even before Napoleon's abdication, and proceeded, at the head of the marshals of the empire, to Compiègne, there to address Louis XVIII. in the most servile language. On June 4, 1814, Louis XVIII. created him peer of France, and captain of a company of the newly established royal guard. His principality of Neufchâtel he resigned to the king of Prussia in exchange for a pension of 84,000 florins. On Napoleon's return from Elba, he followed Louis XVIII. to Ghent. However, having fallen into disgrace with the king in consequence of the concealment of a letter received from Napoleon, he withdrew to Bamberg, where, June 1, 1815, he was killed by 6 men in masks, who threw him out of one of the windows of his father-in-law's palace. His memoirs were published in Paris in 1826.

BERTHOLD, the second apostle of Christianity in Livonia, born in the first part of the 12th century, and killed in 1198 in a skirmish with the natives of Livonia, whom he endeavored, after his arrival at Yxküll, on the Düna, the head-quarters of the first Livonian Christian community, to convert to Christianity, first by amicable theological means, and as these had not the desired effect, by military exertion, in

which he was assisted by the crusaders of lower Saxony.

BERTHOLD VON REGENSBURG, a German missionary preacher, born at the beginning of the 18th century, died Dec. 18, 1772, and buried in the Franciscan convent at Ratisbon, of which he was a member. From 1250 to the close of his life, he preached to immense congregations of 60,000 to 100,000 persons, in Switzerland, Hungary, Austria, Moravia, Bohemia, Saxony, Swabia, &c., speaking to them from the summits of mountains or from the tops of trees. In the Heidelberg university library some MSS. of his sermons are preserved, and a portion of them was published by Kling of Berlin in 1824. The eloquent manner with which he exposed the iniquities of his times seems to have produced an electric effect upon his hearers. Near Glatz, in Silesia, a tent under which he had preached was exhibited long after his death, and revived the feelings of affection and reverence in which his name is held by the people.

BERTHOLLET, **OLAUDÉ LOUIS**, chemist, born Dec. 9, 1748, at Talloire, near Annecy, in Savoy, died at Paris, Dec. 6, 1822. He received his early education at Chambéry, and subsequently entered the university of Turin, where he obtained his diploma as doctor of medicine. Soon after he went to Paris, and made the acquaintance of Mr. Tronchin, a medical practitioner of some eminence, and a native of Geneva. Through the influence of Dr. Tronchin, Berthollet was appointed physician to the duke of Orleans, and while holding this appointment he applied himself diligently to the study of chemistry. He soon became advantageously known by his "Essays" on this branch of science, and in 1781 was elected a member of the French academy of sciences. Some years later, the duke of Orleans procured for him the office of government commissary and superintendent of dyeing processes—a position previously held by Macquer. To this appointment chemistry is indebted for his work on the theory and practice of the art of dyeing, which is much superior to any thing of the kind ever published before. In 1785, Berthollet, at a meeting of the academy of sciences, announced his belief in the antiphlogistic doctrines propounded by Lavoisier, in opposition to the phlogistic theory, then in vogue, and he was the first French chemist of celebrity who did so. He differed from Lavoisier, however, on one point: not admitting oxygen to be the acidifying principle, he cited sulphuretted hydrogen as a compound possessing the properties of an acid; and the justness of Berthollet's views has been confirmed by the discovery of other acids, into the composition of which oxygen does not enter. During the same year he discovered the composition of ammonia, and published his first essay on dephlogisticated marine acid, now called chlorine, proposing the use of it in the process of bleaching, a suggestion which has been extensively applied in

practice. When the French revolution involved the country in war, saltpetre, which had been largely imported for the manufacture of gunpowder, became very scarce, owing to the difficulties of importation. In this emergency Berthollet visited almost every part of France for the purpose of pointing out the means of extracting and purifying the salt from the natural resources of the land. He was also engaged with other men of science in teaching the processes of smelting iron and converting it into steel, which processes were then but little known in France. In 1792 he was appointed one of the commissioners of the mint, and, in 1794, a member of the commission of agriculture and arts, and professor of chemistry at the polytechnic and normal schools. In 1795 he became a member of the newly organized institute of France, and in the following year he was appointed by the directory to proceed to Italy with Monge, to select works of art and science for the French capital. On this occasion he became acquainted with Gen. Bonaparte, and was led to join the expedition to Egypt, where he took part in the formation of the institute of Cairo, the memoirs of which body were printed in one volume in 1800. In conjunction with Lavoisier, Guyton de Morveau, and Fourcroy, Berthollet planned and proposed a new and more philosophical system of chemical nomenclature, which, notwithstanding many imperfections incident to the incipient stage of all improvements, has been very useful to chemical science. He was the author of more than 80 scientific papers, some of which were inserted in the memoirs of the academy, and others were printed in the *Annales de chimie*, *Journal de physique*, and the *Mémoires de physique et de chimie de la société d'Arcueil*, so called from the place where Berthollet lived, the meetings of the society being held at his house. In some of the first memoirs published by Berthollet on sulphuric acid, on the volatile alkali, and the decomposition of nitre, he adopted the phlogistic theory; but subsequently, in a paper on soaps, he showed that they are chemical compounds, in which the oil, by combining with the alkali, acts the part of an acid. Berthollet was the discoverer of the ammoniuret of silver, commonly called fulminating silver. He also first obtained hydrate of potash in a state of purity, by dissolving it in alcohol. In 1808 he published his *Essai de statique chimique*, in which he attempts to confute the opinion of Bergman with regard to the nature of chemical affinity. Sir Humphry Davy in his "Elements of Chemical Philosophy," gives a synopsis of the views of Berthollet on this point, and shows them to be incorrect. In a controversy with Proust, Berthollet maintained that inorganic bodies are capable of combining in all proportions; but the views of Proust have been since corroborated by the doctrine of definite proportions.—On his return from Egypt, Berthollet was made a senator by the first consul Bonaparte, and afterward grand

officer of the legion of honor and grand cross of the "order of reunion." He was created count by the emperor Napoleon, and after the restoration of the Bourbons he was made a peer of France, though not by birth a Frenchman. These high distinctions did not affect the studious and simple mode of life of Berthollet; and being obliged to adopt armorial bearings, he selected the simple figure of his faithful dog. The latter years of his life, however, were embittered by the misconduct of his son, M. Amedée Berthollet, who had already distinguished himself by his chemical researches, but was ruined by dissipation, and finally committed suicide. The shock, no doubt, affected the health and spirits of the father, who, in 1822, was attacked with a fever, which was followed by a number of boils and a gangrenous ulcer of large size. He knew, as a physician, the extent of his danger, and bore with fortitude the sufferings which during several months exhausted his remaining strength.

BERTHOUD, FERDINAND, a Swiss writer on watchmaking, born in Neuchâtel, March 19, 1725, died near Montmorency, June 20, 1807. Intended at first by his parents for an ecclesiastic, his mechanical skill and tastes gained him permission to learn the art of watchmaking. He went to Paris in 1745, where he quickly excelled in his art, especially in the construction of chronometers, in which he surpassed all rivals. He twice visited London, wrote various books upon topics connected with his labors, was a member of the institute of France, and of the royal society of London, and a chevalier of the legion of honor.

BERTIE, a county of North Carolina, at the western extremity of Albemarle sound, bounded on the E. by the Chowan and on the S. by the Roanoke river, and drained by the Cashie. Area, 900 sq. miles; pop. 12,851, including 7,194 slaves; capital, Windsor; surface, flat; soil, fertile; chief staples, Indian corn, cotton, sweet potatoes, and hay. Productions in 1850, 762,563 bushels of Indian corn, 94,836 of sweet potatoes, 1,810 bales of cotton, and 3,566 tons of hay. There were 6 corn and flour mills, 4 saw-mills, 7 tar and turpentine distilleries, and 16 churches. Value of real estate in 1857, \$1,719,919.

BERTIN, the name of a family distinguished in French politics, journalism, arts, and letters. I. LOUIS FRANÇOIS the elder, the founder of the *Journal des Débats*, born in Paris, Dec. 14, 1766, where he died, Sept. 18, 1841. He was intended for the pulpit, but the revolution made him a journalist. In 1793 he formed a connection with the *Journal Français* and the *Courrier universel*, and in 1795 the *Eclair* became his principal means of combating the excesses of the revolutionary party. After the 18th Brumaire, the conservative party had no influential organ except the *Mercur de France*. Bertin felt that the time was propitious for the foundation of a new and powerful journal, and, purchasing from the printer Baudouin, for 20,000

francs, his patent for an advertisement paper, he founded the *Journal des Débats*, the first number of which appeared Jan. 20, 1800. But under the Argus eyes of Napoleon an independent political character was impossible for any journal, and Bertin gave to his a scientific and literary tendency, employing as writers men like Chateaubriand, Royer-Collard, Dussault, Feletz, and Geoffroy. Yet, careful as he was, he gave umbrage to the emperor, and, in 1800, he was accused of royalistic conspiracies and confined for 9 months in the Temple, from which place, however, he continued to edit the *Débats*, which had already acquired considerable influence. Toward the end of 1801 he was exiled to Elba, and after effecting his release he was allowed, on his return to Paris, to resume his connection with his paper, but only under the control of the government, which changed the name from *Journal des Débats* to *Journal de l'Empire*, and imposed upon it a creature of its own, a M. Fiévée, as chief director, who was soon replaced by a still more pliant tool, of the name of Étienne. At the same time the managers of the paper had to defray the salary of the official censor, which amounted to 24,000 francs. But, notwithstanding all these adverse circumstances, the *Journal de l'Empire* was prosperous, and the number of its readers went on increasing from day to day until it printed, in 1811, over 30,000 copies per diem. But the government became frightened at the extent of its influence. Under the mask of literature, theatrical criticism, and fine arts, it had actually insinuated itself into the arena of politics. It opened its columns to the 2 foremost political literary characters of the day, Madame de Staël and Chateaubriand. On every occasion, when literature or the stage permitted, sentiments were put forward by Bertin which were diametrically opposed to the views of Napoleon. After the performance of *Edouard en Ecoisse* the *Débats* came out with a theatrical criticism which bestowed great praise upon the Stuarts; while at the same time the *Mercur de France*, then under the editorial care of Bertin and Chateaubriand, alluded in the same complimentary strains to the English pretender. In such allusions Napoleon detected an attempt to support legitimate royalty, and he took this opportunity to vent his resentment against the paper, by confiscating it, and by sending Chateaubriand, Alexandre Duval, and Bertin himself, into exile in the island of Elba, whence, after a detention of nearly a year, Bertin escaped to Italy, and, in 1814, returned to Paris and resumed the conduct of his journal, which henceforward was published under its original name of *Journal des Débats*. On March 20, 1815, Bertin followed Louis XVIII. to Ghent, where, from April 14 to June 21, 1815, he edited *Le Moniteur de Gand*. After the 2d restoration he was again at work in Paris, and supported the king until the dismissal of Chateaubriand, when the *Débats* went over to the opposition, and Bertin was indicted for

having used in one of its articles, written by M. Bequet, the ominous and memorable words, *Malheureuse France, malheureux roi!* He was acquitted by the court of appeal. After the advent of Louis Philippe, the *Débats* steered clear through all political breakers, by making itself the organ of the constitutional bourgeoisie. M. Bertin presided over it from the first day of its publication until the eve of his death, Sept. 12, 1841. Many temptations had been held out to him, in the course of his long career, to occupy prominent political positions, but he declined all such proffers. He was fond of the society of literary men and artists, and figured himself as an author in the novels, *Elisa*, *La Cloche de minuit* and *La caverna de la mort*, partly translated from the English. II. BERTIN DE VEAUX, LOUIS FRANÇOIS, brother of the preceding, born in Paris, Aug. 18, 1771, died there, April 23, 1842, took an active part in the foundation of the *Journal des Débats*, after having been previously connected with the management of the *Eclair*. During the suspension of the *Débats*, in 1801, he established a banking house, and became, at the same time, vice-president of the tribunal of commerce. Like his brother, he followed Louis XVIII. to Ghent, and on his return, in Sept. 1815, was elected member of the chamber of deputies. He subsequently, until 1817, occupied the post of secretary of the minister of police. In 1820 he was reelected to the chamber, and in 1824 and 1827 he was member for Versailles. On Aug. 9, 1829, when Polignac came into office, he resigned the post of councillor of state, which he had held since 1827, and was one of the 221 deputies whose hostile vote led to the downfall of the cabinet, and became the forerunner of the July revolution, which Bertin prophesied by saying that "in less than a year France would be covered with tricolored cockades." After 1830, although the *Débats* had not joined in the protest of the other journals against the July ordinances, he submitted to the new order of things, and exerted a great influence in the chamber. He resumed his seat in the council chamber, and, Sept. 22, 1830, was sent on a diplomatic mission to Holland and England. Oct. 18, 1832, he became a member of the chamber of peers. He did not long survive his brother, to whose journalistic genius he was chiefly indebted for his prominent position. III. ÉDOUARD FRANÇOIS, nephew of the preceding, a landscape painter of some eminence in Paris, where he was born in 1797. When his brother Louis Marie Armand died in 1854, the interests of the journal required that the name of Bertin should continue to appear as chief editor; and Edouard Bertin, although his interest in the paper, like that of many other members of the family, is purely of a pecuniary character, and although entirely absorbed in his artistic pursuits, consented to sign his name every day to the paper as nominal editor. IV. LOUIS MARIE ARMAND, son of Louis François, born in Paris, Aug. 22, 1801, died Jan. 11, 1854, was employed, from 1820, in the *Jour-*

nal des Débats, and succeeded his father, as chief editor, after having been for some time secretary of Chateaubriand in the French legation in London. Under his management Michel Chevalier, Philarette Chasles, Allourey, Cuvillier-Fleury, Benazet, St. Ange, Berlioz, and other rising and eminent men, were enrolled under the banner of the *Journal des Débats*. Like his father, he pleaded the cause of his political and literary friends, but never accepted a favor or office for himself. He followed, also, his father's conciliatory course in politics, yet never degraded himself to the level of subserviency; and on one occasion, when Louis Philippe sent him for insertion a laudatory notice of the duke d'Aumale, he rejected the royal MS. V. LOUISE ANGÉLIQUE, sister of the foregoing, born at Roches, Jan. 5, 1805. She possesses the hereditary intelligence of her family, modified by feminine grace and delicacy. She is distinguished both as a musical composer and poetess. Her opera of "Esmeralda," with the libretto of Victor Hugo, was produced Nov. 12, 1836, with success. She has composed 2 others, and published a volume of poems entitled *Les Glanes*. Her poems are tender, sad, and harmonious, the versification peculiarly correct and elegant, and yet, although crowned by the academy, they have failed of complete success.

BERTRAND, HENRI GRATIEN, count, a French general, born March 28, 1773, at Châteauroux, died Jan. 31, 1844, celebrated chiefly for his faithful devotion to Napoleon, whose exile at St. Helena was not only shared by the general, but also by his wife. Napoleon dictated to him memoirs of the campaign of Egypt and Syria, which were published, after the death of the general, by his sons, in 1847. After the death of Napoleon, he returned to Paris, in 1821, the sentence of death passed upon him in 1816 having been cancelled by Charles X., who reinstated him in his former position. After the revolution of 1830, he was elected by his department to the chamber of deputies.

BERTRAND DE BORN, a celebrated troubadour and warrior of the 12th century. He was viscount of Hautefort, and assembled nearly 1,000 men under his feudal banner. Wars were his delight, and he was indefatigable in stirring them up. He took part in all the quarrels between Henry II., of England, and his sons, and urged Henry of Guienne, the elder, to rebel against his father, and declare himself sovereign of his continental possessions; he even pursued the war himself when Henry had made his submission to his father. He was at last subdued by Richard, but managed his affairs with so much address, that he obtained pardon, and his castle was restored to him. He excited the weak and undecided Henry to a second revolt, he hardly knew why, against his father. Henry died during the contest, and Bertrand was made prisoner by the king in his own castle, but he succeeded in disarming his anger by a few artful words, and all was restored to him, with the addition of a payment in money to defray the

expenses of the war. At the moment of the death of the old king, Bertrand was engaged in exciting Richard Cœur de Lion to rebellion. This event changed his plans, and he availed himself of the rivalry between Richard and Philip Augustus, to engage them in a crusade. After the disastrous termination of that enterprise, history loses sight of him, and biographers only relate that he died in the habit of a monk at Cîteaux. See Thierry's *Conquêtes de l'Angleterre*.

BÉRULLE, PIERRE DE, cardinal, was born of a noble family near Troyes, Feb. 4, 1575, and died in Paris, Oct. 2, 1639. He early showed remarkable mental acuteness and knowledge, and became distinguished for skill in controversy. He instituted, and was the first superior of, the order of Carmelites in France, and also founded the congregation of the Oratory in spite of the opposition of the Jesuits. He was a statesman as well as priest, and took a leading part in politics. He was often opposed to Richelieu, whose jealousy he excited, and who could not conceal his satisfaction at the news of his death. He accompanied the princess Henrietta to England, on her marriage with the prince of Wales. He shunned elevated positions, and was very unwillingly obliged to accept the hat of a cardinal. This elevation made no difference, however, in his humble way of life, and did not prevent him from sometimes taking part, as he had always done, in the servile work of the religious community to which he belonged. He was also a man of letters, and was the first to appreciate and encourage the genius of Des Cartes, urging him, by his sense of obligation to his Creator, to make known to the world his discoveries.

BERWICK, JAMES FITZJAMES, duke of, natural son of James II. of England and Arabella Churchill, the sister of John Churchill, the celebrated duke of Marlborough, born Aug. 21, 1670, killed before Philippsburg June 12, 1784. He was created duke of Berwick during his father's tenure of the English crown. He was early destined to a military life, was educated in France, and served his first campaigns in Hungary, under Charles, duke of Lorraine, who commanded for Leopold I. When the English revolution broke out, he was in attendance on his father, and accompanied him in his flight from Rochester to France. In the following year, 1689, he landed with his father at Kinsale, in Ireland, where he was, in spite of his youth, at once placed in command of a division of the army. In the first Irish campaign he greatly distinguished himself, both in forcing the passage of the river Finn at Cladiford, and subsequently in the repulse of the sortie *en masse* of the defenders of Londonderry, in which M. de Mairmont was killed at the first fire, and the duke had 2 horses shot under him. In the following year he conducted the retreat of the Irish army from Dundalk to the banks of the Boyne, with decided skill, and showed courage

in that disastrous battle. After his return to France, he never interfered again in the affairs of his native country, except in so far as he was opposed to her generals in the field, while serving the sovereigns to whom he had attached himself. While on the continent, he served under Luxembourg in Flanders; and then in the campaigns of 1702 and 1703, under the duke of Burgundy and Marshal Villeroy, in the course of which he was opposed to his illustrious uncle, the duke of Marlborough. In 1706 he was made a marshal of France, and sent into Spain, with an army, to support Philip V., the Bourbon claimant of the crown. The latter had just been driven, in defeat, with a broken and ruined army, from Barcelona, the siege of which he had been forced to raise, into Madrid, by the archduke Charles, also proclaimed king of Spain, under the title of Charles III., supported by an army of English and Portuguese. There Berwick gained the brilliant and decisive victory of Almanza. Some 12 years later, war breaking out between France, his adopted country, and Spain, whose king was his personal friend and benefactor, he did his duty well to both; for while he led his forces into Spain, he wrote to his son, the duke of Leyria, who was in Philip's service, admonishing him to do his duty to that king unmindful of his father. He was killed at the siege of Philippsburg by a cannon-ball, and died universally esteemed and respected.

BERWICK-ON-TWEED, a town of England, and county in itself, on the north side of the Tweed, within half a mile of its confluence with the German ocean; pop. in 1851, 12,578. It formerly belonged to Scotland, and was the chief town of Berwickshire, and the theatre of many sanguinary conflicts between the English and Scottish armies. It was finally ceded to England, in 1502; and by treaty concluded between Mary, queen of Scots, and Edward VI., it was declared a free town, and independent of both states. Many privileges still remain, peculiar to the town and its liberties; one of these is the fact that it is mentioned in the title of the kings of England, her present majesty being D. G. queen of England, Ireland, and Scotland, and of the town of Berwick-on-Tweed. Berwick was the gate of the two kingdoms, on the eastern side of the island; and through it either of the hostile nations had to pass, on that frontier, before it could invade the territories of the other; which for many years was the favorite and constant pastime, if not of the kings, at least of the border nobles and moss-troopers of the frontiers of the two countries. Consequently, the first step preliminary to what was called a warden raid, that is to say, an invasion by the feudal army of the marches, under the command of the lord warden, in order to distinguish it from the private forays of individuals, was the capture of the town and the slaughter of its garrison, if it was held by the enemies, for the time being, of the invading party; for

it was constantly garrisoned, constantly captured and recaptured, by the two contending parties, sometimes changing owners several times in the course of a year or two. During the furious conflicts between Robert Bruce on one side and Edward I. and Edward II. on the other, the town of Berwick suffered severely. On one occasion, when the English had been driven out, and the town strongly garrisoned with Scots, a large squadron of English ships, which had been ordered to coöperate with the royal army on its advance, but which had preceded the land forces too hastily, and entered the river unsupported, was either taken or burnt; and the indignation of Edward was excessive. He at first attempted to take the town by assault, as soon as he came before it, at a *coup de main*; but, being repulsed with some loss, sat down before it and commenced regular approaches. Here historians differ; the English writers affirming that, on a second assault being delivered, it was taken by storm; while the Scots insist that Edward had raised the siege, and was apparently in full retreat, when he gained possession of the gates by a stratagem, disguising his men with St. Andrew's crosses, and sending them forward under Scottish banners, as if they were reinforcements, in which belief they were admitted. In this instance, the dispute is a matter of some consequence, as on it turns, in some degree, the question of the character of Edward; since the bloody sack which followed the capture of the place, and which in one case would be merely one of the terrible and painful consequences of war, would be, on the contrary, in the other, as it is charged to have been by the Scottish writers, a savage atrocity on the part of Edward. Those writers are, however, obviously, though perhaps naturally, unfair to Edward, as any one must perceive who reads history impartially. It was to put an end to these cruel collisions that, by the convention between Mary and Edward, the town was declared independent; so that, as being too weak to resist either kingdom, it could not be held guilty by either for permitting the passage through its territories of the armies of the other. It is now a fine and flourishing seaport, driving a considerable carrying trade, especially in eggs and salmon, between north and south Britain; and having a considerable capital employed, and many boats and men engaged, in the salmon fisheries.

BERWICKSHIRE, a county on the Tweed, in the S. E. extremity of Scotland; area 446 sq. m.; pop. in 1851, 36,297. The Lammermoor is in this county. The chief employment of the county is agricultural pursuits. The land, being in the hands of large farmers on long leases, is cultivated with great skill. It abounds in places of historical interest, among which are the remains of Coldingham priory and of Dryburgh abbey, in which Sir Walter Scott was buried.

BERYL (Lat. *beryllus*, Gr. *βήρυλλος*). The

beryl, emerald, and aquamarine, are all the same mineral species, and only distinguished from each other by their blue and yellow shades of green or by the delicacy of the crystals. The beryl is sometimes also white. The emerald is more transparent and of finer colors than the beryl, and makes a handsomer gem. In some of the rich green specimens the color is derived from oxide of chrome. In the beryl oxide of iron appears to be the coloring matter. Aquamarine is a beautiful sea-green variety known to the ancients, and spoken of by Pliny, as already quoted under the article Aqua. The composition of the species beryl is that of a double silicate of alumina and glucina, consisting of silica 66 to 68 parts in 100; alumina 15 to 17; and glucina 12 to 15. It crystallizes in regular 6-sided prisms, which are often striated with longitudinal channels. Its hardness, rated as 7.5 to 8 on the mineralogical scale, is less than that of topaz and greater than that of quartz. Its specific gravity is 2.7. The crystals are found in quartz veins in granitic rocks, and also in the metamorphic limestones. There are many celebrated localities of gigantic beryls and beautiful emeralds in various parts of the world. Upper Egypt produced the mineral in ancient times, and it is still found in the mica slate of Mount Zabarah. Siberia, Hindostan, Limoges in France, Peru and New Granada, in South America, have all furnished splendid emeralds. The finest in the world are probably from the Muzo mine near Santa Fé de Bogota in New Granada; these are in a vein of dolomite in hornblende rock. A specimen from this locality is in the possession of the duke of Devonshire, which measures 2 inches in length, and weighs 8 ounces and 18 dwts., and is regarded as the finest emerald in Great Britain. Mr. Hope of London possesses one supposed to be from Coimbatore, which has been cut. It weighs 6 ounces, and is perfect in color and transparency. It cost £500. In the royal collection at Madrid are some splendid specimens of great size. The largest beryls known have been found in Acworth and Grafton, New Hampshire, and in Royalston, Massachusetts. One from Grafton measures 4 feet and 8 inches in length, 82 inches through in one direction, and 22 in another transverse, and weighs 2,900 pounds. Another is estimated to weigh nearly 2½ tons, measuring 45 inches through it in one direction and 24 inches in another. A crystal in the museum at Stockholm, found in Sweden, is considered to be the largest in Europe; it weighs 80 pounds. The value of the specimens is not at all dependent on their size. The large crystals are of coarse texture and feeble lustre, and possess no beauty. Emeralds are very successfully imitated by the French lapidaries, who use oxide of chrome for giving the rich green color.

BERZELIUS, JOHAN JAKOB, M. D., baron, a Swedish chemist, born Aug. 20, 1779, at the village of Wäversunda, near Linköping, in East Gothland, died at Stockholm, Aug. 7, 1848. His father filled the office of government school-

master at the village of Wafversunda; an office which is usually more highly appreciated in Sweden than in other European nations, with the exception perhaps of Scotland. Berzelius received his early education at home, under the care of his father, and in 1796 commenced the study of medicine in the university of Upsal. The chemical chair was then filled by Afzelius, with Ekeberg for his assistant. The lectures at Upsal, in those days, says Berzelius, were read without any experimental illustrations, and the instructions in the laboratory were of a superficial and unsatisfactory kind. After passing his examinations in philosophy, Berzelius quitted the university in 1798, and became assistant to a medical practitioner at Medevi, where he soon became known by an excellent chemical analysis of the mineral waters of that place. This analysis was published in 1804, when he took his degree of doctor of medicine at Upsal. Soon afterward he published his "Physical Researches on the effects of Galvanism on organized Bodies," which established his reputation as an experimental philosopher, and obtained for him the appointment of assistant professor of medicine, botany, and chemical pharmacy at Stockholm. In 1807 he succeeded Sparrmann, in the senior professorship of this department. He followed for some time the mode of teaching which was practised at Upsal, but afterward, on the suggestion of Dr. Marcet, who visited Stockholm, he adopted the method of illustrating his lectures by experiments, which gave great satisfaction to the students, and rendered him popular as a teacher of chemical science. As early as the year 1806, in conjunction with Hisinger, he commenced the "Memoirs relative to Physics, Chemistry, and Mineralogy," and his numerous contributions to those sciences have obtained for him that high rank which he holds as an accurate observer and experimental analyst. He was one of the chief founders of the medical society of Sweden, and in 1808 he became a member of the royal Swedish academy, of which he was chosen president in 1810. In the intervals of his public duties he paid several visits to Paris, and in 1812 he spent some time in London. In 1815 the king of Sweden named Berzelius a knight of the order of Vasa; and in 1818 he was appointed perpetual secretary of the Stockholm academy of sciences. On the coronation of the king in the same year, Berzelius was ennobled; and, contrary to the custom of the country, was allowed to retain his own name, the title of Baron Berzelius being ennobled in the lists of Swedish nobility. In 1821 he was named commander of the order of Vasa, and the sovereigns of France and Austria named him member of the legion of honor, and of the order of Leopold. These marks of distinction did not draw his attention in the least from his laborious and successful investigations; his important and experimental researches were never interrupted by worldly success and popularity; and even when he resigned his professorship in favor of Mosander,

in 1832, he still continued to pursue with ardent perseverance, his favorite investigations and experiments. In 1833, Berzelius married; and on that occasion, the king of Sweden wrote him a letter, in which he observed that "Sweden and the whole world were debtors to the man whose entire life had been devoted to pursuits as useful to all as they were glorious to his native country."—The works of Berzelius are both numerous and important. He contributed to the "Physical Memoirs," during a period of 12 years, some 47 original papers of great merit. His treatise on chemistry went through 5 large editions, and was partly re-written each time. It is most complete and best known in the edition translated into French under his own inspection, by Esslinger, and published in 8 vols. at Brussels in 1835. The last volume contains his very remarkable dissertation on chemical apparatus, with essays on qualitative and quantitative analysis, and the use of the blow-pipe. His mineralogical system is very highly valued. He considered mineral species as depending on the atomic proportions of their principal ingredients, and arranged and designated them accordingly. At the request of the academy of sciences, in 1822, he undertook those very remarkable "Annual Reports on the Progress of Physical Chemistry and Mineralogy" which have been so useful to the scientific world. As early as the year 1807, when the atomic theory of Dalton was hardly well known in Britain, Berzelius commenced his accurate researches on definite proportions, in which he extended and systematized the experiments of Wenzel and Richter; applying them not only to salts, earths, and metals, but to gases and organic compounds; assisting greatly to establish the truth of definite proportions. To him belongs the merit of proving that the proportion of oxygen is constant in all the neutral salts of the same acid; and his researches gave the first impulse to modern organic chemistry. Those who knew him personally bear testimony to the noble frankness and the manly simplicity of his character; and state that he was ever ready to impart to others, without ostentation, his vast stores of knowledge, and to assist the researches of those engaged in kindred pursuits, by his advice, the use of his laboratory, and the unrestrained communication of his accurate methods of investigation. Soon after his marriage in 1833, the directors of the Swedish iron works, in grateful acknowledgment of the light his researches had thrown on their art, and as a testimony to his important services to the useful arts of his country, conferred on him a pension for life; and we may here observe, that all the studies and investigations of Berzelius were made with a view to their practical application in the useful arts, as much as to the discovery of new truths of science. In the latter part of his life, Berzelius was afflicted with paraplegia, depriving him of the use of his lower limbs; but his mind was always clear, and he bore the affliction with calmness and resignation. Decay

was slow and gradual, without acute suffering, and he died in the 69th year of his age.

BESANÇON (*Vesontio*), a fortified place of great strength, the chief town of the French department of Doubs, on the river Doubs; pop. in 1856, 43,544. The lower town on the other side of the river, formerly called Baltaus, is connected with Besançon proper by a stone bridge, the foundations of which are Roman. The town has an antique appearance. It has several fountains, one of which represents the apotheosis of Charles V. Its public buildings and institutions are numerous, namely, the cathedral of St. John (possessing as a relic the winding-sheet of Christ, which was formerly exhibited and attracted thousands of pilgrims, and some fine paintings), 2 Gothic churches, 8 hospitals, a deaf and dumb asylum, an academy of mathematics and belles-lettres, a lyceum, a public library containing 68,000 volumes and many MSS., a museum, and a museum of natural history, an academy of sciences, a society of agriculture and the arts, a theological seminary, a school of medicine, surgery, and pharmacy, a school of drawing and sculpture, of artillery, and of watch-making. It has extensive manufactories of watches, thread, cotton and silk stockings, paper hangings, fire-arms, leather, hardware, and linen. Besançon appears in history first, as Vesontio, in Caesar's *Bellum Gallicum*. In the days of the Roman empire Vesontio was the capital of the province of *Maxima Sequanorum*. The Alemanni destroyed it in the time of Julian the Apostate, and it was again ravaged by Attila and the Huns. In 386 it defended itself successfully against the Vandals. It was rebuilt by the Burgundians. It became the chief city of the county of Burgundy, more commonly called Franche Comté, and was made by the emperor Frederik I. a free and imperial city, 1162. Between the 9th and 18th centuries, it was called Chrysopolis, the golden city. Granvelle, the minister of the emperor Charles V., was born here, and became its archbishop. While Franche Comté was under Spanish dominion, Besançon preserved its rights as a German city, but lost them and became French when Franche Comté was ceded to France by the treaty of Niméguen, 1678. In 1814, Besançon was besieged but not captured by an Austrian army under Prince Lichtenstein. Among the eminent natives of Besançon, beside Granvelle, are Abel Rémusat, Marshal Moncey, Victor Hugo, Charles Nodier, Charles Fourier, and P. J. Prudhon.

BESBORODKO, **ALEXANDER ANDREYEWITCH**, a Russian statesman, born at Stolnoje, in Little Russia, in 1742, died August 9, 1799. He was minister of foreign affairs under Catherine II. and Paul I.; concluded the treaty of peace at Jassy, and other memorable treaties, and organized the coalition between Russia and Great Britain against France. He was made an Austrian count by Joseph II., and a Russian prince by Paul I. He left the reputation of an able statesman, and of a zealous patron of the fine arts.

BESIKA BAY, in Asiatic Turkey, in the province of Kudavenkiar, and the district of Karassi, near the promontory of Sigeum, is famous in contemporary history as the station of the British and French fleets in 1839 and 1840, and again on June 13 and 14, 1853, until Oct. 22. The fleets were sent to Besika bay as a counter-demonstration to the Russian occupation of the principalities, and were ordered to leave it and advance near to Constantinople, in consequence of the destruction of the Turkish squadron at Sinope.

BESITTOON, or **BISUTUN**, an escarped precipice which bounds the plain of Kermanshah in that part of modern Persia which was anciently called Media. On the lower part of this precipice is a huge tablet planed smooth by art. Below there is a rocky terrace strewn with blocks of hewn stone. To these the name Besittoon is given, meaning "without pillars." About 50 yards above this platform there are the remains of a piece of sculpture with an inscription in Greek on it nearly obliterated by one in modern Persian, relating to the grant of lands. On the authority of Diodorus and Otesias, this work is attributed to Queen Semiramis. Further to the east is another pile of sculpture, exhibiting a line of 12 figures, of whom 1 is a king, another a prostrate suppliant, and 9 others captives in his rear. Under each is a short inscription in the arrow-headed character; under these again are 8 deep and closely written columns in the same character. They have not been deciphered.

BESKOW, **BERNHARD**, a Swedish dramatist, born in Stockholm, April 19, 1796, was ennobled in 1826, and appointed marshal of the royal household in 1833. He officiated for some time as director of the royal theatre, and is the author of several excellent tragedies, which were translated into Danish and German by Oehlenschläger, and of which *Torkel Knutson* is considered the best acting play on the Swedish stage. He wrote an opera, *Trubaduren*, for which Oscar, the present king of Sweden, composed the music. His literary reputation was increased by his books of travel, by his poetical works, and by his contributions to the press. The great prize of the academy was awarded in 1824 to his poem *Sveriges anor*. He became one of the 18 directors of this institution, and in 1834 perpetual secretary. The rare honor of receiving a diploma as doctor of philosophy from the university of Upsal, was vouchsafed to him in 1842.

BESSARABIA, the most S. W. province of the Russian empire, between Moldavia, Transylvania, and the Black Sea, consists of those portions of Turkey lying between the Dniester and the Pruth, which were wrested from the Turks by the treaty of Bucharest in 1812, and formed previously the N. E. part of Moldavia and the Budjak or Bessarabia proper. By the late treaty of Paris (March 31, 1856), a portion of Bessarabia was given back to Turkey, in order to give that power a safer frontier than

the Pruth. Article 20 declares, "The new frontier shall begin from the Black Sea 1 kilometre to the E. of the lake Bourna Sola, shall run perpendicularly to the Akerman road, shall follow that road to the Val de Trajan, pass to the S. of Bolgrad, ascend the course of the river Yalpuck to the height of Saratska, and terminate at Katamori on the Pruth. Delegates of the contracting powers shall fix in its details the line of the new frontier." By article 21, the territory ceded by Russia shall be annexed to the principality of Moldavia under the suzerainty of the Sublime Porte. A difference between the Russian commissioners on the one hand and the Turkish, British, and Austrian commissioners on the other, as to which of 2 Bolgrads was meant, necessitated the meeting of a new European conference at Paris early in 1857, which settled that question substantially in favor of Turkey. Before its recent dismemberment, Bessarabia contained an area of about 18,900 sq. m., and 792,000 inhabitants, in 8 towns, 16 villages with markets, and 1,080 hamlets. These towns and villages contain 184 churches of stone, and 719 of wood, 16 chapels, 22 monasteries and convents, 1 ecclesiastical seminary, 9 district schools, and 2 hospitals. The commerce is mostly in the hands of the Jews and the Greeks. The Russo-Greek bishop resides at Kishenev. The peasantry are subject to feudal imposts. The soil of Bessarabia is very fruitful, but poorly cultivated, producing madder and saffron which grow wild, flax, hemp, tobacco, maize, millet, wheat, melons, pumpkins, apricots, and peaches. The mulberry thrives. The rearing of horned cattle, horses, and sheep is the great resource of the inhabitants. The culture of wine is also prosecuted. The northern portion of Bessarabia is traversed by a branch of the Carpathian mountains, here sinking into the plain. They are well wooded, and abound in wild animals. The southern part of the province is prairie-land. The chief or only mineral product is salt, which is obtained in great quantities from the lakes. The fisheries are plentiful. The principal rivers are the Danube, the Pruth, Yalpuck, and Dniester. These rivers form large lakes or marshes. The province is divided into 6 districts: Akerman, Bender, Ohoczim, Bielzi, Ismail, and Kishenev. Kishenev is the seat of government.

BESSARION, JOHN OF BASIL, a Greek monk, born probably at Trebizond, in the year 1389, died at Ravenna, Nov. 19, 1472. He was titular patriarch of Constantinople, archbishop of Niosea, afterward cardinal and legate to France, in the time of Louis XI. After having spent 21 years in a monastery of Greece, devoted to theology and literature, he left it to follow the emperor John Palæologus to Italy, who had gone there with the intention of being present at the council of Ferrara, in the hope of uniting the Greek and Latin churches. They were accompanied by many Greeks, distinguished by their talents and dignity. Bessarion seconded

with so much zeal the projects of Palæologus that he became odious to the Greek church, while Pope Eugenius IV. rewarded him for his devotion to that of Rome, by the dignity of cardinal-priest. He had the confidence of many popes, and was near becoming one himself, but was prevented by the dissenting voice of one of the cardinals, who esteemed it an indignity to the Latin church, to choose a Greek pope. He was sent to France by Sixtus IV., to reconcile Louis XI. with the duke of Burgundy, and obtain aid against the Turks. He did not succeed, and it is pretended that he received a personal insult from the king, which humiliation some suppose to have been the cause of his death.

BESSEL, FRIEDRICH WILHELM, a German astronomer, born at Minden, July 22, 1784, died March 17, 1846. Having shown in early life a taste for astronomy, and some skill as a computer, he was appointed assistant to Schröter, at the observatory of Lilienthal. In 1810 he was appointed director of the observatory building at Königsberg, and held that post to the day of his death. In 1818 he published *Fundamenta Astronomiæ*, a discussion of the observations made upon the fixed stars, by Bradley, at Greenwich, 60 years before, and including dissertations of inestimable value, on the method of stellar astronomy. He afterward published, regularly, his own observations, measured the distance of the star 61 Cygni from the earth, and took a distinguished part in all the astronomical discoveries and geodetic discussions of his day, and was justly considered, while living, the leading astronomer of the world, blending theory and practice with a master hand.

BESSIÈRES, JEAN BAPTISTE, marshal of the French empire, born at Praisac, in the department of Lot, Aug. 6, 1768, killed at Lutzen, March 1, 1818. He entered the constitutional guard of Louis XVI., in 1791, served as a non-commissioned officer in the mounted chasseurs of the Pyrénées, and soon after became a captain of chasseurs. After the victory of Roveredo, Sept. 4, 1796, Bonaparte promoted him on the battle-field to the rank of colonel. Commander of the guides of the general-in-chief during the Italian campaign of 1796-'97, colonel of the same corps in Egypt, he remained attached to it for the greater part of his life. In 1802, the rank of general of division was conferred upon him, and, in 1804, that of marshal of the empire. He fought at the battles of Roveredo, Rivoli, St. Jean d'Acre, Aboukir, Marengo—where he commanded the last decisive cavalry charge—Austerlitz, Jena, Eylau, and Friedland. Despatched in 1808 to assume the command of a division of 18,000 men stationed in the Spanish province of Salamanca, he found on his arrival that Gen. Cuesta had taken up a position between Valladolid and Burgos, thus threatening to intersect the line of communication of Madrid with France. Bessières attacked him and won the victory of Medina

del Rio Secco. After the failure of the English Walcheren expedition, Napoleon substituted Bessières for Bernadotte, in command of the Belgian army. In the same year (1809), he was created duke of Istria. At the head of a cavalry division he routed the Austrian general, Hohenzollern, at the battle of Esslingen. During the Russian expedition he acted as chief commander of the mounted guard, and on the opening of the German campaign of 1813, as the commander of the French cavalry. He died on the battle-field while attacking the defile of Rippach, in Saxony, on the eve of the battle of Lützen. His popularity with the common soldiers may be inferred from the circumstance that it was thought prudent to withhold the news of his death for some time from the army.

BESTOUJEFF, ALEXANDER, a Russian poet, patriot, and martyr, born in 1793, at the country seat of his father in the government of Voronezh, killed in battle in the Caucasus in 1837. He was educated in one of the imperial military establishments, and as an officer of the guards was an aide-de-camp of Prince Alexander of Wurtemberg in 1825. Bestoujeff, with Rylejeff, with whom, in 1828, he edited the first literary periodical published in Russia, under the title of the "Northern Star," was among the foremost leaders in the conspiracy and insurrection of 1825. For this he was condemned to lose his military rank and to be sent to Yakootsk, in Siberia, as a common soldier, without any claim to be advanced. In the snows and in the frozen atmosphere of this place of exile, his fiery imagination acquired new vigor. Under the name of the Cossack Marlinaky he wrote small novels and sketches for the "Telegraph," a periodical of Moscow, and for some others. By a special order of the emperor Nicholas, after passing 2 or 3 years there, he was transferred to the army of the Caucasus. There his adventurous and dangerous life had its effect on his style, and he now showed a great talent for description and for analysis of human character and passions. The more considerable of his writings during this period are 2 novels, *Mullah Nur* and *Ammaleth Beg*. His fate might have been rendered more supportable, but for the blind hatred of the grand duke Michael, the younger brother of the emperor Nicholas. Toward the year 1836, Nicholas relented, permitted the advancement of Bestoujeff from the ranks, and opened to him a prospect of again becoming an officer, and thus recovering his lost social condition. But it was too late, as shortly after he was killed along with a considerable detachment of Russian soldiers, by the mountaineers, in an ambush near Ekaterinodar. Bestoujeff, like Rylejeff, Lermontjeff, and Pushkin, all stars of Russian literature, is one of the many victims who, for different reasons and in various ways, were devoured by the reign of the emperor Nicholas. Two of his brothers, Nicholas and Michael, who were involved in the conspir-

acy and outbreak of 1825, suffered capital punishment in 1826.

BESTOUJEFF-RIUMINE, MICHEL ALEXIS PETROWITZ, count, a Russian statesman, born in Moscow, in 1698, of a family of English origin, and of the second class of nobles in Russia, died in St. Petersburg, April 24, 1766. He was educated in Germany, entered the civil service under Peter the Great, and became a diplomatist. Under the empress Anne he was made a member of the cabinet, and the empress Elizabeth, whose fullest confidence he possessed, created him count, great chancellor of the empire, and his influence in the government was almost boundless. He was strongly opposed to the Prussian and French diplomatic influence, and was disliked on this account by Peter III., nephew and presumptive heir of Elizabeth. He concluded several treaties with England, Sweden, and Denmark, which were favorable to English policy. By a treaty concluded in 1747, he paved the way for the union of Schleswig and Holstein with the kingdom of Denmark, and thus planted the first germs of the confusion and dissensions which prevailed in 1848 between that kingdom and Germany, and have not yet been entirely pacified. By his influence, the Russian troops supported Austria against Frederic the Great in the 7 years' war. But their commander, Apraxin, retired to Russia, and this occasioned the fall of Bestoujeff. He was imprisoned and degraded, but Catharine II., in 1762, restored him to liberty and to his previous social position, creating him a field-marshal, but not calling him to active service. He is regarded as the inventor of a chemical preparation known in medicine under the name of *tinctura tonica Bestoucheffi*.

BETANÇOS, DOMINGO DE, a Spanish missionary, born at Leon about the end of the 15th century, died in 1549. He emigrated to Hispaniola in 1514; he learned the Indian tongue, instructed the natives in the doctrines of Catholic Christianity, and endeavored to save them from Spanish cruelty. In 1526 he passed over into Mexico. Here he founded a convent, and was the Indian's friend. From Mexico he visited Guatemala, and founded another convent there. It was owing to his representations to the holy see that Paul III. promulgated his bull (1587) reminding all Christians that pagan Indians were their brethren, and should not be hunted down like wild beasts. Betanços refused the bishopric of Guatemala, and preferred to remain the simple provincial of his order. He died 1 month after his return to Spain, in the convent of St. Paul, at Valladolid.

BETEL NUT. The leaf of the betel pepper, *piper betle*, and the nut of the areca palm, *areca catechu*, together constitute this article, which is improperly called betel nut. But as an article of commerce it is sold separately under the name of betel nut, because as a masticating article it is always used with the leaf of the betel pepper. The habit of chewing this compound has extended from the islands of the

Malay archipelago, where it is chiefly found, to the continent of Asia, and its use is now universal from the Red sea to Japan. Its preparation for use is very simple; the nut is sliced and wrapped in the leaf, with a little quicklime to give it a flavor. All classes, male and female, are in the habit of chewing it, and think it improves the digestion. It gives to the tongue and lips a scarlet hue, and in time turns the teeth perfectly black. The Malays have a hideous appearance from its use, but the Chinese are very careful to remove the stain from the teeth. Persons of rank often carry it prepared for use in splendid cases worn at the girdle, and offer it to each other as people of Europe or America offer snuff.

BETHAM, SIR WILLIAM, an English antiquary and genealogist, born at Stradbroke, Suffolk, 1779, died at Blackrock, near Dublin, Oct. 23, 1858. From his father, the Rev. William Betham (author of "Genealogical Tables of the Sovereigns of the World," and "A Baronetage," in 5 vols. 4to), he may have derived a predilection for genealogy and heraldry. Brought up to the printing business, its mechanical details annoyed him. Much more to his taste was the task of revising a portion of Gough's edition of Camden. In 1805 he went to Dublin as clerk to Sir Charles Fortescue, Ulster king of arms; soon after, he became his deputy, and succeeded him in 1820. He had previously (July, 1812) been appointed genealogist of the order of St. Patrick, and knighted. He was also deputy-keeper of the records at Dublin. He arranged, classified, and catalogued several hundred volumes of these papers—made an index, of 40 folio vols., to the names of all persons mentioned in the wills at the prerogative office, Dublin; largely employed his time in antiquarian researches; wrote books to show the identity of the Etruscans and the Ibero-Celtic race, and of both with the Phœnician; and also produced two standard books—one on "Parliamentary and Feudal Dignities," the other "On the Origin and History of the Constitution of England, and of the early Parliaments of Ireland." Sir William's successor, as Ulster king of arms, was Mr. Bernard Burke (soon after knighted), author of the well-known "Peerage."

BETHANY, a village of Palestine, on the eastern slope of the mount of Olives, 15 furlongs from Jerusalem, mentioned in the New Testament as the place where Christ was anointed, often lodged, and raised Lazarus from the dead. His ascension, too, took place on his way to and near Bethany. It is now a desolate village of about 20 families, called by the Arabians El-Azerjeh. The monks and Mohammedans point out various objects of curiosity, among which is a ruined tower which they say was the house of Mary and Martha, the stone on which Jesus sat, the tomb of Lazarus, a deep vault in the limestone rock, probably a natural cave remodelled by human labor, in which the Franciscans say mass twice a year. A church,

called the castle of Lazarus, was built over this grave by St. Helena in the 4th century. In the 12th century it became the site of a very important monastic establishment. It was still in existence in 1484, but there now remain of it only the stone walls.

BETHANY, a post village of Brooke co., Va., situated 16 miles N. E. of Wheeling. It is the seat of Bethany college, founded in 1841, by the Rev. Alexander Campbell, the founder of a new sect of Baptists called Disciples.

BETHEL, a city of ancient Palestine, 12 Roman miles N. of Jerusalem. It was originally called Luz, and was named Bethel (house of God) by Jacob, who here beheld in a vision the angels ascending and descending. Bethel was a city of Ephraim, lying near the northern boundary of Benjamin. The ruins called Beitin occupy its ancient site.

BETHEL, a flourishing town of Shelby co., Mo., lying on the north fork of North river, 98 miles N. N. E. of Jefferson City. It was settled in 1842 by a German colony from Pennsylvania, who own 4,000 acres of fertile land, and practise farming and the mechanical arts. The German language is the only one used. They have a handsome church, mills, and a glove factory. Pop. 1,000.

BETHEL COLLEGE, a flourishing educational institution, established by the Cumberland Presbyterians, at McLemoresville, a village of Carroll co., Tenn., 114 miles S. W. of Nashville.

BETHELL, SIR RICHARD, attorney-general of England under Lord Palmerston, born in 1800. He graduated as B. A. at Oxford before he was 18, being "first class" in classics, and "second class" in mathematics, and was elected a fellow of Wadham college. In 1823 he was called to the bar, and devoted himself to equity practice with much success. He was made a queen's counsel in 1840, and solicitor-general, December, 1852, under Lord Aberdeen's government, when he was knighted. In November, 1856, when Sir Alexander Cockburn was appointed chief-justice of the common pleas, on the death of Sir John Jervis, he was succeeded, as attorney-general, by Sir Richard Bethell, who was also counsel to the university of Oxford, and vice-chancellor of the county palatine of Lancaster. As an equity lawyer his standing is high. His politics are ultra liberal. He entered parliament in April, 1851, for the borough of Aylesbury, which he has since continued to represent. As a parliamentary speaker he has no reputation, but is highly esteemed as "a good business man." He went out of office with the Palmerston cabinet in February, 1858.

BETHENCOURT, JEAN, seigneur de, the conqueror of the Canary isles, born in Normandy, died 1425. He was chamberlain of Charles VI. of France. His house having been pillaged and himself ruined by the English, he mortgaged his estate and went to La Rochelle, made up a company and set sail in

quest of adventures, May 1, 1402. After touching at the Spanish ports, and taking on board a Guanche prince, Angeron, whom he found at Cadiz, he sailed for the Canaries. He visited the islands separately, and constructed a fort at Lanzarote. Finding his forces insufficient to subdue the natives, he returned to Spain for reinforcements, leaving his companion, Gadifer, in command. On his return from Spain with succor, he found that Gadifer had already subdued a considerable number of the natives. The Norman nobleman called himself lord of the Canary islands, and had a native king baptized with the name of Louis, Feb. 20, 1404. The conversion of the greater number of the Guanches to Christianity followed. Bethencourt wished to extend his conquests to Africa, but dissensions arose between himself and Gadifer, which resulted in the return of the African expedition without having effected any thing, and the abandonment of the Canaries by Gadifer. Bethencourt imported into the Canaries many mechanics and farmers from Normandy, induced the pope to send a bishop there, Dec. 15, 1405, redeemed his Norman estate from its indebtedness, retired thither to end his days, 1406, and left the Canaries in the hands of his nephew.

BETHENCOURT Y MOLINA, AGUSTIN DE, a Spanish engineer, born on the island of Tenerife, 1760, and descended in a direct line from the conqueror of the Canaries. He died at St. Petersburg, July 26, 1826. He was educated at Madrid. When Spain was subjugated by French arms, he entered into the service of Russia, where he reached the rank of a major-general. He was after the peace employed by the Russian government to execute at Nijni-Novgorod the public buildings, which give accommodations to the great fair held there. He established the corps of hydraulic engineers, and a school for the exact sciences.

BETHESDA (place of effusion), the name of a pool or fountain which, according to Scripture, was situated near the sheep-gate, and having porches or resting-places around it for the sick. As the name imports, the waters of this fountain are said to have been subject to periodical and intermittent effusion, and were believed by the Jews to have certain medicinal virtues, to heal the diseases of those who stepped first into them at their flow. At this pool Jesus is related by John to have performed the miracle of healing the lame man. For a long time travellers have pointed out a dry basin or reservoir, which from its construction was once evidently designed to hold water, and lying at the north-eastern corner of the Temple Mount, as the Bethesda of Scripture. Its extent is about 460 feet, including an excavation extending from its south-western corner under the wall of Temple Mount, as measured by Dr. Robinson. The southern point of the reservoir extends nearly to the modern gate of St. Stephen. This gate is supposed by most travellers to be the sheep-gate of Scripture.

Dr. Robinson, however, had some reason to suppose that this was a mistake, and applied himself on the spot to an investigation of the matter. The result is, that this indefatigable scholar and Scripture geographer has probably restored to the world the real Bethesda. Since the days of Quaresmius (1625), who first made the suggestion, Biblical scholars have surmised that there was a connection existing between the waters of the pool of Siloam, situated on the south-eastern declivity of the high land on which the city of Jerusalem is built, and the fountain of the Virgin, some 1,200 feet to the north, and about 1,000 feet directly south of Temple Mount. Dr. Robinson found that there was also a popular tradition that such connection existed, but which way the waters flowed, if either, was not determined even traditionally. He resolved to ascertain both these facts. The result was that he actually made the passage from the fountain of the Virgin, to the north, to the pool of Siloam at the south, and found the measured distance to be 1,750 feet, the channel being somewhat circuitously cut through solid rock for most of the distance. While at the fountain of the Virgin, which he found to be the supply for the pool below, he actually witnessed one of the intermittent flowings described in Scripture as the troubling of the waters by an angel, and ascertained from a woman who came to the place to wash, that such effusions were frequent, but irregular, at all seasons of the year, though less so in the summer, and that she had frequently seen flocks and men standing around it, waiting for the outpourings, when it was completely dry. The fountain is minutely described, as also the pool, in their present appearance, in Dr. Robinson's "Biblical Researches," vol. i., pp. 383-348. Little doubt can remain that the fountain of the Virgin is the Bethesda of Scripture. The waters of the two have indeed been pronounced by travellers entirely different. But no force can be attached to this, now that the fact of a connection is established. The irregular flowing of the fountain of the Virgin is yet to be certainly accounted for. Under the grand mosque occupying the site of the ancient temple, there is known to be a well, which receives its water from an arched chamber, and discharges it somewhere. It is suggested by Dr. Robinson that it may find an outlet to this fountain of the Virgin. It is certain that the well is sometimes dry, but its connection with the fountain has not yet been sufficiently examined to warrant any decision.

BETH-HORON, upper and lower, two villages mentioned in Scripture, situated 9 miles N. W. of Jerusalem. The former is identical with the modern village of Beit-Ur. There is a pass between the two villages, down which Joshua pursued the Amorite kings. Traces of ancient walls are still visible.

BETHLEHEM, the "bread-town," or, as the Arabs now term it, the "place of flesh." Bethlehem-Ephratah, so called to distinguish it

from a Bethlehem in Zebulon, is famous for many remarkable events, as the birth of David and his inauguration and anointing by Samuel. But that which renders Bethlehem eminent in Christian history, is the nativity of Jesus. The present inhabitants of Bethlehem point out to travellers the very spot where, as they believe, he first saw the light, marked with a star in the floor of the grotto under the church of the Nativity, and in another part of the same grotto they show a marble stone, scooped out in the form of a manger, which they relate to have taken the identical place of the original manger in which he was laid. The church is said to have been built by the empress Helena, and it was afterward repaired and adorned by Constantine. Just out of the city, in the valley which it overlooks, Dr. Clarke thought he discovered the "wall of Bethlehem" referred to by David. Dr. Robinson does not agree with him, and found no well to which he could assign this distinction. It is difficult to say how much value is to be attached to the traditions concerning the exact spot of the birth-scenes of Jesus. Kitto assigns considerable force to these traditions, but on the whole decides against them. Two things certainly give the town of Bethlehem an interest to modern Christians. Here, and in this very grotto, that scholar and father of the early church, Jerome, spent many years of his time in meditation and writing; and this town was one of the first possessions wrested from the Saracenic and Turkish power in the crusades. It was erected into a see, but in 1244 was overrun by the Tartars. Its inhabitants are now all Christians, and are divided among the Latin, Greek, and Armenian churches. They sell to travellers various relics, some of which are very curiously and exquisitely carved. The present city is on the brow of a hill, or rather a long ridge, and overlooks the opposite valley. There never has been any dispute that the present city occupies the site of the ancient one.

BETHLEHEM, a township and post borough of Pennsylvania. It is in a pleasant and commanding situation on the Lehigh river, across which, at this place, is a bridge 400 feet long. Bethlehem was settled by the Moravians, in 1741, and contains a Gothic church of that denomination, built of stone and of large dimensions, a female seminary of high reputation, and several schools and benevolent institutions. It is much resorted to in summer. Pop. 2,104.

BETHLEHEMITES. I. An order of monks somewhat like the Dominicans, who came to England in 1257. They were so named because they wore on the breast a five-pointed star in commemoration of the star that appeared at the birth of Jesus. They never flourished much, and had only one house or convent in England. This was at Cambridge. II. The **AMERICAN BETHLEHEMITES** were established in the city of Guatemala by a Franciscan monk named Bethencourt, a native of the island of Teneriffe, about 1655. Innocent XI. (1687) sanctioned the order,

as also the female order of Bethlehemites, founded by Maria Anna del Galdo, who belonged to the Tertiaries of St. Francis. Twenty years later, the privileges of the order were enlarged to an equality with those of the Augustinians, Dominicans, and Franciscans. There are about 40 convents of Bethlehemites in the Canary islands, and a parent monastery in Guatemala.

BETHLEN, GABOR, a sovereign prince of Transylvania, and king of Hungary, born in 1580, of an eminent Magyar Protestant family, died Nov. 15, 1629. During the dissensions in Transylvania between the 2 Bathoria, Bethlen succeeded in seizing the supreme power. He owed this to his popularity, and to the support of the Transylvanian and Hungarian magnates, but above all to a Turkish army bestowed in return for having recognized the suzerainty of the Porte. Austria could not oppose him, and in 1619 he joined the Bohemians, and thus participated in the beginning of the 30 years' war. He invaded Hungary, took Pressburg, and the Magyar nobles elected him their king. He, however, concluded a peace with Ferdinand in 1620, and renounced the royal title in consideration of some lands in the north of Hungary, and in Silesia. In 1623 he again took up arms, and at the head of 60,000 men invaded Moravia; but being unable to join the Protestant army, he made an armistice, then a peace, which he again broke in 1626, but without any great harm to Austria, whose army defeated that of Mansfeld, which defeat paralyzed the intended movements of Bethlen. His reign was one of the most celebrated and prosperous among the Magyars. He protected science, erected an academy at Weissenburg, calling thither several celebrated and persecuted German professors, and was generally considered as one of the props of Protestantism, and a glory of the Magyar race.

BETHMANN BROTHERS, a banking establishment at Frankfort-on-the-Main, known by its negotiations of loans with the Austrian, Danish, and other governments. Originally, the firm was carried on under the name of Jakob Adamy, an uncle of the elder Bethmann, who, to escape religious persecution, emigrated toward the end of the 17th century from Holland to Nassau, near Frankfort. Adamy took his nephews, Johann Philipp and Simon Moritz Bethmann, into the business, and after his death, Jan. 2, 1748, they changed the name of the firm from Jakob Adamy to Bethmann Brothers.—**SIMON MORITZ BETHMANN**, the son of Johann Philipp, born Oct. 31, 1768, died Dec. 28, 1826, became the chief of the house after the death of his father. He was the man of genius of the family, a philanthropic citizen, an able financier and accomplished courtier. The emperor of Austria ennobled him, and Alexander of Russia appointed him his consul-general. One of his sisters married Jakob Hollweg, a partner of the house, which union founded the Bethmann-Hollweg branch of the family. Another sister

married Victor François vicomte de Flavigny. The present head of the Frankfort banking house is PHILIPP HEINRICH MORITZ ALEXANDER VON BETHMANN, born Oct. 8, 1811, married in 1842 to a Saxon gentlewoman of ancient family, Marie von Bose. His brothers, KARL OESAR LUDWIG and ALEXANDER, were ennobled and made chamberlains by the king of Bavaria. The Bethmanns, beside the large amount of capital invested in their banking operations, are owners of extensive estates in Bohemia. Karl and Alexander own the estates of Krzinetz, Ronow, and Dobrowan. This stake in the Austrian possessions undoubtedly contributes to their readiness to oblige the Austrian government, in the prosperity of which they are personally interested. The Bethmanns, eclipsed as they are by the Rothschilds, are less involved than the latter firm in stock-jobbing operations, and although the business which they transact is on a smaller scale, it is also less hazardous. They have wide-spread relations with Vienna, Berlin, St. Petersburg, Amsterdam, Paris, London, &c. Of the great banking business arising through the Frankfort fair, and the position of that city as a commercial mediator between southern, central, and northern Germany, a considerable share passes through the hands of the Bethmanns. The Bethmann villa, at Frankfort, contains Dannecker's celebrated statue of Ariadne riding as the bride of Bacchus upon a panther.

BETHPHAGE, a place of Scriptural interest which has passed away, leaving no trace behind. Its name was significant of its general location, but not of the particular site. "The place of figs," it must have been situated somewhere on the eastern slope of that range of hills extending north and south between Jerusalem and Bethany, at the foot of which in the western valley flowed the Kedron. The principal points of this range are the mount of Offence and the mount of Olives. The fig-tree still abounds both on the eastern and western slopes of the range, and even beyond Bethany toward Jericho. Some travellers have been disposed to place Bethphage on the site of the modern village of Abu Dis, lying south, and a little to the east of Bethany. Dr. Robinson thinks that could not have been its position, and gives as little credit to the tradition of the monks of the country, who place it between Bethany and the summit of the mount of Olives, since there is no trace that a village of any description ever existed there. Lightfoot thought it was a district extending from the mount of Olives to Jerusalem, and embracing a village of the same name. Calmet mainly agrees with him, and thinks it is not certain that any thing more is meant than a house or stand for selling figs from gardens on the slope of Olivet where they were raised, and therefore no trace of a village need be expected.

BETHSAIDA. Until the time of Reland there were some very knotty geographical questions involved in the Scriptural accounts of Bethsaida, and the events which had occurred

there. Reland discovered that there must be two Bethsaias; one situated on the east and north side of Lake Gennesaret, near the embouchure of the Jordan into that sea, and the other somewhere on the western side of the same lake. This discovery solved the difficulties. Still no eastern travellers have succeeded in identifying the western city of this name, though it possesses much the greater sacred interest. It was the birth-place of 8 disciples of Jesus, and a frequent abiding place of Jesus himself. Here he wrought many of his miracles, and in Chorazin, a Galilean village, which is hidden in quite as great geographical obscurity at the present day. It was near this latter Bethsaida that Jesus is related to have fed the multitudes miraculously. No geographical traces of these places are discoverable since the days of Jerome. The word Bethsaida means "the place of fish." It was on the lake on which Bethsaida bordered that the disciples toiled all night and caught nothing, and then drew a full net when they cast it on the other side of the ship, by the direction of Jesus.

BETH-SHEMESH, a city of ancient Palestine, which probably occupied the site of the modern village, Ain Shems, about 15 miles W. S. W. of Jerusalem, where extensive ruins are still remaining.

BETHUNE, a fortified town of France, department of Pas-de-Calais, built on a rock above the river Brette, 16 miles N. N. W. of Arras. Pop. in 1856, 7,720. Its castle was constructed by Vauban. It has a Gothic church, communal college, 2 hospitals, and manufactures of linen, cloth, beer, &c. It was taken by the allies in 1710, and restored in 1718, by the treaty of Utrecht.

BETHUNE, DRUM, an eminent philanthropist, born at Dingwall, Scotland, in 1771, died in New York, Sept. 18, 1824. In early life he resided at Tobago, and removed to New York, where he settled as a merchant in 1792, joined the church of Dr. Mason, and was prominent for his efforts in the cause of religion. Before a tract society was formed in this country he printed 10,000 tracts at his own expense, and commenced their distribution. He also imported Bibles for distribution. From 1803 to 1816 he supported one or more Sunday schools. He devoted to such works one-tenth of his gains. — GEORGE W., son of the preceding, a genial divine and poet, minister of the Dutch Reformed church, was born in the city of New York, in March, 1805. In 1826 he entered the ministry of the Presbyterian church, but passed over the next year to that of the Dutch Reformed. He was settled first at Rhinebeck, on the Hudson, whence he removed to Utica, at Philadelphia in 1834, and in 1849 over a large and influential congregation in Brooklyn, N. Y. He is the author of several highly esteemed works of devotion, entitled the "Fruit of the Spirit," "Early Lost," "Early Saved," and the "History of a Penitent;" of a volume of "Lays of Love and Faith, and other Poems," published in 1848;

and of collections of orations, occasional discourses, and sermons. He has reputation as a scholar and wit, and edited in 1847 an American edition of Walton's "Complete Angler," being himself an enthusiastic follower of the "contemplative man's recreation." He is highly esteemed as a sound and learned divine, a preacher of great earnestness and eloquence, and a secular orator of excellent fancy and pleasant humor.

BETHUNE, JOHN, a Scotch peasant poet, born at Moniemail, in the county of Fife, in 1812, died Sept. 1, 1839. He passed his boyhood tending his father's cows on the shores of a small "waveless lake," and, like most of his countrymen, had heard at an early age the finest strains of Burns. A parish school-master, from the college of St. Andrews, recited to him the best pieces of Scott, Byron, Moore, and Campbell, with which he stored his memory. He had written many verses before he was apprenticed to a weaver in 1824, and from that time, though afflicted with feeble health, wrote in secret a great variety of poems, many of which were afterward published. His pieces which had most success with the public were short tales and sketches, from which he derived a sufficient income for his support during the latter years of his life.—His brother ALEXANDER, born in July, 1804, died June 18, 1843, coöperated with him in his literary enterprises; and also wrote "Tales and Sketches of the Scottish Peasantry" and other works. He was also a noble illustration of literary culture under the most adverse circumstances.

BETHUNE, JOHN ELLIOT DRINKWATER, a member of the supreme council of India, and president of the council of education, born in 1801, died Aug. 12, 1851. He was educated at Cambridge, called to the bar in 1827, and after occupying different situations under the government of 1848, was appointed to the above-mentioned place in India. His administration is memorable for the success of a measure destined, perhaps, to exercise a paramount influence upon the Asiatic world, but hitherto considered visionary, the establishment of schools for the education of native females, conducted by Europeans, and in their method of instruction. By pledges that no interference should be attempted with the religion of the pupils, he secured the countenance and active support of several native gentlemen of rank, and a school was commenced under their auspices. No man was admitted except himself; but it was an object of curiosity and interest to the native ladies, to whose attendance and approval it was largely indebted for its success. After the number of pupils had increased to 50, other schools were opened, and before he died there were 5 or 6 in operation in Bengal. All the honors due to a great benefactor were paid him at his funeral by an immense concourse of natives.

BETICK, an important ferry across the river Oxus, 60 miles S. W. of Bokhara, on the route

between Persia and Bokhara. The river is at this point 2,000 feet across, and 25 in depth.

BETISBOOKA, a river of Madagascar, emptying into the Mozambique channel, on the N. W. coast of the island. About 15 miles from its mouth it expands into a gulf, dotted with islands. It is the principal route from the Ovah capital to the sea-coast.

BETLIS, or BIRLIS, a town of Turkish Armenia, in Koordistan, lying on the W. shore of Lake Van, in lat. 37° 45' N., long. 43° 31' E. It is situated in a wide ravine, more than 5,000 feet above the sea level. Pop. about 10,000, of whom about $\frac{1}{2}$ are Armenians. The town has 3 mosques, 12 convents, some baths and caravansaries, and an ancient castle. It has manufacturing of cotton cloths, celebrated for their bright red dye of fire-arms, and silverware, and exports excellent tobacco to Constantinople.

BETROTHMENT, a mutual compact between 2 parties, by which they bind themselves to marry. In the Orient, where the climate contributes to the precocity of the sexes, and leads to contracting marriages even during childhood, the ceremony of betrothal was surrounded with peculiar solemnity, although it frequently happened among the Chinese, Hindoos, Persians, and Syrians, that the principal parties to the contract were still in the nursery, and did not make each other's personal acquaintance until the day of the wedding. With the Hebrews a betrothment was a ceremony, as it still is in our days, in which financial considerations took a prominent part. The bridegroom gave to the bride a shekel, and said to her, *Mekad-deshet*, "We are engaged." He was at liberty to obviate this embarrassing oral effusion by writing the word down upon paper, and handing it to his prospective wife. Rings were also exchanged, but the chief formality, to which the orthodox Jews of the present day still adhere, consisted in the solemn reading of the marriage contract, in presence of the relatives and friends and other witnesses, with the civil authorities, now represented chiefly by a public notary and by the lawyers who have drawn up the contract. This contract is peculiarly strict as to the money which the family of the bride make over to the bridegroom. When all parties have signed the contract, the whole procession of relatives and friends generally assemble at the house of the bride's father, where great embracing and rejoicing take place, which generally terminate in luxurious banquets, when toasts are offered to the young couple, whose delicate blushes are soon obliterated by the convivial flashes which the champagne and Rhine wine produce on such delightful occasions. The father of the bride, who has promised a large dowry, is the great character at such Hebrew betrothments. On the one hand, the effort of parting with so much money, on the other the gratification of his pride in having the world see that he has any money at all to part with, blend in a most cu-

rious manner with his paternal feelings; and, on the whole, there is something in the importance attached to the dowry which detracts from the solemnity of the event. The contract is called by the Jews *thensim ris-ehonim*. In the laws of Moses there are also certain provisions respecting the state of the virgin who is betrothed. Selden's *Uxor Hebraica* gives the schedule of Hebrew contracts of betrothment. With the Jews, a young lady is rarely allowed to enter into an engagement without the cognizance of her relatives, who, in fact, in most cases, arrange matters for her, and generally avail themselves of the services of marriage brokers, who receive a percentage upon the amount of the dowry, beside a gratuity. In the continental cities these Jew marriage brokers have matches always on hand, with dowries varying from \$5,000 to \$200,000, and as soon as the betrothment has taken place they look upon the bargain as concluded; but cases frequently occur, in which on the day of the wedding the bridegroom breaks the match because the Austrian metalliques or Spanish Ardoins, tendered in payment for the dowry, have fallen in value, and reduced the dowry perhaps to the extent of 20 or 25 per cent.—Among the ancient Greeks, the father made a selection for his daughter. The young couple kissed each other for the first time in the presence of their friends, and it was customary for the bridegroom to bring flowers daily, until the wedding day, to the house of his bride.—The Arab sends a relative to negotiate about his intended bride, and the price at which she is to be had.—The bridegroom of Kamtschatka has to serve in the house of his prospective father-in-law before an engagement is allowed to take place.—With the Letts and Esthonians no engagement is considered valid until the parent and relatives of the bride have tasted of the brandy which the bridegroom presents.—Among the Hottentots, the would-be bridegroom is not allowed to propose without being accompanied by his father. Father and son walk arm in arm, with pipes in their mouths, to the house of the bride, where the engagement takes place.—Among some of the indigenous tribes of America it was customary to keep the betrothed lady in durance for 40 days, as the superstition prevailed that she would exert an occult influence upon any thing she touched or any body with whom she came into contact. During these 40 days the lady was kept on starvation fare, so that when the day of the wedding came she looked more like a skeleton than like a bride.—In the Roman law, the *sponsalia*, or betrothment, is defined to be a promise of future marriage, which could take place after the parties were 7 years of age. The *sponsalia* might be made without the 2 parties being present at the ceremony, and might be dissolved by one party certifying to the other in the following words: *Conditiones tuae non utor*.—The canonists speak of betrothing, and in the middle ages the Roman and

canon statutes constituted the law on the subject. While the Greek church considered betrothments as binding as weddings, the church of Rome viewed them simply as promises of marriage. But as much confusion ensued, the council of Trent decreed that no betrothment was valid without the presence of a priest and of two or three witnesses. This decree was adopted in France by Louis XIII., in 1639, and became known as the *ordonnance de Blois*. Until the revolution of 1789, when betrothments ceased to have legal importance, they were generally celebrated in France by pronouncing the nuptial blessing in front of the church, by reading the marriage contract, and by exchanging presents, while the French bridegroom, as was also the case with the Roman bridegroom, had to pay a certain amount of earnest-money to ratify the bargain. In England, formal engagements of this kind were usual down to the time of the reformation. In Shakespeare and other writers many illustrations occur, from which it may be inferred that betrothments were celebrated by the interchange of rings, the kiss, the joining of hands, and the attestation of witnesses. Marriage contracts have been preserved in many ancient British families, with stipulations respecting the apparel of the future bride and the cost of the entertainment which is to be provided at the wedding. In modern times, the Hebrews and Germans, more than any other nations, surround betrothment with a prestige of solemnity, although even with them it has now seldom any other meaning than that the parties have privately engaged themselves. In England and the United States rings are frequently interchanged between the lady and the gentleman, and wherever it can be satisfactorily proved in law that either party has suffered materially by any breach of promise on the part of the other, the courts will award damages. In the United States, engagements are made with more nonchalance than in Europe—the free will of young people is less interfered with, and the whole relation is stripped also in many other respects of the conventional form which it assumes on the old continent.

BETTERMENTS, in law, improvements made to an estate which render it better, and are more than mere repairs.

BETTERTON, THOMAS, a celebrated English actor, born 1685, died April, 1710. He was the son of an under-cook in the service of Charles I., and was apprenticed to a bookseller in London. His master, Mr. Rhodes, obtained a license for a company of players in 1659, and with him Betterton commenced his career. He was engaged by Davenant in 1662. His position was soon preëminent, and he became an established favorite. He seems to have had no personal graces from nature to second his rare talents, if the following account be true: "Mr. Betterton, though a superlatively good actor, labored under an ill figure, being clumsily made, having a great head, a short, thick neck,

stooped in the shoulders, and had fat, short arms, which he rarely lifted higher than his stomach. His left hand frequently lodged in his breast between his coat and waistcoat, while with his right he prepared his speech; his actions were few but just; he had little eyes and a broad face, a little pockfretten; a corpulent body, and thick legs, with large feet; he was better to meet than to follow, for his aspect was serious, venerable, and majestic. In his latter time, a little paralytic; his voice was low and grumbling, yet he could tune it by an artful climax which enforced universal attention even from the fops and orange girls. He was incapable of dancing even in a country dance, as was Mr. Barry, but their good qualities were more than equal to their deficiencies." Betterton had the rare faculty of identifying himself with his part. He married Mrs. Sanderson, an actress of almost equal merit with himself, whose Lady Macbeth was reckoned a perfect piece of acting. He was prudent and saving, but he lost his small means in a commercial speculation, and a theatre which he afterward opened was not successful. After his retirement from the stage, he reappeared in his old age a few times to take a benefit; and his last appearance, April 13, 1710, was the proximate cause of his death; for having used remedies to check a fit of the gout, in order that he might keep his engagement with the public, he drove it to his head. His widow died of grief for the death of her husband.

BETTINELLI, SAVERIO, an Italian author, born in Mantua, July 13, 1713, died there Sept. 13, 1808. He was educated by the Jesuits of his native town of Bologna, and became a member of their order in 1736. From 1739 to 1744 he taught literature at Brescia; while at Bologna, whither he was sent for the purpose of attending the divinity school, he displayed his ruling passion by the composition of a tragedy, entitled *Jonathas*. In 1748 we find him at Venice as professor of rhetoric, and in 1751 at a college in Parma, where he remained until 1759. Among his acquaintances were the foremost men of Italy, Germany, and France, including Voltaire. In 1767 he preached at Verona, and thrilled his congregation by the pathos of his sermons, while in his house he delighted them by the luxuries of his table. When the order of the Jesuits was abolished, he immediately threw up the professorship, which he then held at Modena, and retired to his native town, where he devoted himself for the rest of his life to literary pursuits.

BETTY, WILLIAM HENRY WEST, commonly known as "the young Roscius," born at Shrewsbury, in England, Sept. 13, 1791. In infancy he accompanied his father, who was a farmer, to Ireland. Here he was educated by his mother, who encouraged his decided taste for recitation by frequently reading to him. In 1802, at Belfast theatre, he first saw a dramatic performance. The play was "Pizarro," in which Mrs. Siddons astonished him as Elvira, and so

much charmed him, that he imitated her manner, accents, and attitudes, in various dramatic speeches which he learned for the purpose, and declared that he should die if he were not permitted to be a player. The stage-struck child was taken by his parents to the manager of the theatre, who, after hearing him recite, placed him under the able instruction of Mr. Hough, the prompter. Under this gentleman he studied the parts of Osman, young Norval, Rolla, and Romeo, and made his *début* at the Belfast theatre, Aug. 1, 1808, in that of Osman. At this time he was not twelve years old. His success was decided, and after playing the above-named parts at Belfast, he performed at Cork with even greater effect, and was enthusiastically received at Glasgow and Edinburgh. At the latter place, Home pronounced him to be "the genuine offspring of the son of Douglas." From this time he travelled over England, with still augmenting fame and profit, as "the young Roscius." In 1804 he was engaged at Covent-Garden theatre, London, for 12 nights, at 50 guineas a night, and a clear benefit—undertaking to play at Drury Lane, on the intervening nights, on the same terms. At that very time, John Kemble's weekly salary was under 36 guineas, and Lewis had only £20. "The young Roscius" opened at Covent Garden, Dec. 1, 1804, as Achmet, in "Barbarossa," was enthusiastically received, played with much self-possession, and remarkably well—for a child. He drew immense houses in several characters, Hamlet included; was presented to George III., the royal family, and the leading nobility; received numerous and valuable presents; had Opie and other artists pressing him to sit for his portrait, and engravers busily employed in multiplying them; and so great was the Rosciomania, that even the university of Cambridge so far went with the tide of the boy's celebrity, as to make "Quid noster Roscius eget" the subject of Sir William Brown's prize medal. It was proposed to erect statues of him. In 28 nights, at Drury Lane, he drew £17,210, an average of £614 a night, and at least as much more at Covent Garden. A youth of thirteen who could draw £84,000 in 56 nights, must have had great merit or great luck. After he had rapidly realized sufficient to secure himself a handsome independence for life, Master Betty retired from the stage in 1807, and was placed for 3 years at Shrewsbury school. He resumed his profession at Covent Garden in 1812, at the age of 21; but the charm was ended; the performance was considered as very commonplace, and was not repeated. Lord Byron prophesied before the reappearance that he could not succeed, his figure being fat, his features flat, his action ungraceful, and no expression in his "muffin face." He permanently retired to private life, and has brought up a large family very respectably.—HENRY BETTY, his eldest son, born Sept. 29, 1819, was also seized with a passion for acting, and after several years' practice in the provinces, appeared

at Covent Garden in Dec. 1844, as Hamlet. He reminded old play-goers of "the young Roscius" in his prime, and is a very respectable, although not a first-class performer.

BETWAH, a river in Hindostan, which takes its rise in the Vindhyan mountains, near Bhopaul, and flowing nearly 840 miles in a N. E. direction through the provinces of Malwah and Allahabad, finally joins the Jumna below Kalpee. Near Erech a slight fall occurs. The country through which it flows is highly cultivated. The river at times is said to rise to a great height; in a portion of its course it flows through beds of iron ore.

BEUDANT, FRANÇOIS SULPICE, a French mineralogist and natural philosopher, born at Paris, Sept. 5, 1787, died in the same city, Dec. 9, 1850. After having taught successively in the polytechnic school and the normal school, he became in 1811 professor of mathematics in the lyceum of Avignon, and in 1818 professor of physics in the lyceum of Marseilles. He had devoted his studies to zoology, and already published some curious observations and experiments concerning the mollusks, when in 1815 he was sent by Louis XVIII. to England, to take charge of the transportation to France of that monarch's mineralogical cabinet, of which he was appointed director, and from this time he made the mineral kingdom the chief object of his study. In 1818 he made a tour to Hungary for mineralogical and geological observations, and on his return to Paris succeeded Haly, who had been his master, in the faculty of sciences, became a member of the academy of sciences, and inspector-general of the university. He published numerous works, among which were accounts of researches concerning the relation of crystalline forms to chemical composition, and of his observations in Hungary, elementary treatises on mineralogy and geology, and also a remarkable grammar of the French language.

BEUGNOT, ARTHUR AUGUSTE, count, a French historian and archaeologist, born March 25, 1797, at Bar-sur-Aube. He was bred to politics, and occupied a seat in the chamber of peers under Louis Philippe. He was a constant advocate of freedom in public instruction; the revolution of 1848 sent him to the legislative assembly, where he was instrumental in the adoption of a liberal measure on that subject. He has now given up politics for literature, and is engaged in superintending some of the valuable historical publications of the French government.

BEUGNOT, JACQUES CLAUDE, count, a French statesman, born in 1761, at Bar-sur-Aube, died in June, 1835. In the legislative assembly he distinguished himself by bold opposition to the revolutionists; he was especially eager in assailing Marat. This made him so unpopular that, after Aug. 10, he did not dare to appear in his seat. Being arrested in 1793, he was liberated by the revolution of the 9th Thermidor, and lived then in retirement till the 18th

Brumaire, when he was made assistant to Lucien Bonaparte in the home department. In 1807 he took part in the organization of the newly created kingdom of Westphalia, being for a while appointed minister of finance. In 1808 he was administrator of the grand duchy of Berg and Cleves. When the Senate declared the right of Napoleon to the French empire forfeited, Beugnot was nominated to the home ministry by the provisional government. On the arrival of Louis XVIII., he was appointed director-general of police, then minister of the navy, and being faithful to his new master, he followed the king to Ghent. After the battle of Waterloo he was for a while postmaster-general. In 1824 he resigned his seat in the chamber of deputies. The revolution of July confined him to private life.

BEUKELS, WILLEM, a Dutch fisherman, was born at Biervliet, in Dutch Flanders, in 1397, where he died in 1449. He discovered the method of preserving herrings. A statue was erected to his memory by Charles V.

BEURNONVILLE, PIERRE DE RUEI, marquis de, marshal of France, was born at Champignolle, in Burgundy, May 10, 1752, died April 23, 1821. Originally intended for the church, he chose the profession of arms and served in the East until 1789, when he was sent home by the governor of the Isle of Bourbon, his temper being quarrelsome. Arriving in Paris at the commencement of the revolution, he identified himself at once with it, and in 1792 was appointed aide-de-camp to Marshal Luckner, and was soon after named general-in-chief of the army of the Moselle; in 1793 he became minister of war. Sent in 1793 to arrest Dumouriez, he was himself arrested by Dumouriez, and confined at Ehrenbreitstein, Eger, and Olmütz until 1795, when he was exchanged, and became successively general-in-chief of the army of the north, inspector-general of infantry, ambassador to Berlin in 1800, to Madrid in 1802, and count of the empire. In 1814 he was commissioned by Napoleon to organize means of defence upon the frontier, and on the abdication of Napoleon was named minister of state and peer of France by Louis XVIII. On the return of Napoleon to Elba, he was proscribed by a special decree, and retired again, but was reinstated in all his dignities by Louis XVIII. after the battle of Waterloo. He became marshal of France in 1816, and marquis in 1817.

BEVEDERO, a lake in La Plata, province of Mendoza, consisting of 2 distinct bodies of water, called the greater and lesser Bevedero, connected by a river about 8 miles long. The greater is 40 miles in length from N. to S., and from 8 to 25 in width. The lesser measures about 22 miles by 15. The lake lies between lat. 32° 45' and 34° 17' S., and long. 66° and 66° 32' W.

BEVEL, in carpentry, an angle differing from a right angle; also, a tool like a T, of 2 pieces, capable of being fastened at any angle.

BEVELAND, North and South, 2 islands be-

longing to Holland, in the province of Zealand, and formed by the mouths of the Scheldt. North Beveland lies east of the island of Walcheren, and is separated from South Beveland by the island of Wolfersdyke. South Beveland, the larger and more fertile of the 2, contains Goes, the capital, and several forts and villages. The united area of the islands is 120 sq. m.

BEVERIDGE, WILLIAM, an English prelate and theologian, born at Barrow, Leicestershire, in 1688, died March 5, 1708. At the age of 20 he published an able Latin treatise on the Hebrew, Chaldee, Syriac, Arabic, and Samaritan languages. In 1681 he became archdeacon of Colchester; in 1684, prebend of Canterbury; and, at the revolution of 1688, chaplain to William and Mary. He declined the bishopric of Bath and Wells on the deprivation of Bishop Kenn for non-juring, but in 1704 he became bishop of St. Asaph. He published in his lifetime a "Treatise on Chronology," a learned work on the "Canons of the Greek Church to the Eighth Century," beside various minor works. In 1824 the life and writings of Bishop Beveridge were published in 9 vols. 8vo, by the Rev. Thos. Hartwell Horne.

BEVERLEY, JOHN OF, an Anglo-Roman saint, archbishop of York, born at Harpham, Northumberland, near the middle of the 7th century, died at Beverley in 721. He was a man of erudition and tutor to Bede, and was canonized 8 centuries after his death. His name, like that of Pindar, saved his native place from being ravaged by a conqueror—William the Norman spared the place for his sake. He founded a college at Beverley and wrote several works.

BEVERLY, a thriving post-town of Essex co., Mass., opposite Salem, with which it is united by a bridge, and 16 miles N. N. E. of Boston, on the eastern R. R. The inhabitants are chiefly engaged in commerce, and in the fisheries. It has, however, manufactures of carriages, britannia ware, and cotton and woollen fabrics. The village contains a bank, a weekly newspaper, an insurance office, and an academy. A branch railroad connects it with Gloucester. Pop. in 1855, 5,944.

BEVERLY, ROBERT, historian and clerk of the council of Virginia, died in 1716, is noted only for having written a history of Virginia, embracing an account of its first settlement, government and productions, with remarks upon the Indians of the province, their religion, manners, and customs, published in 1705.

BEVERWYK, a town of the Netherlands, in north Holland, 7 miles north of Haarlem, at the head of the Y, an outlet of the Zuyder Zee. Pop. 2,252. The invasion of England by William of Orange, in 1688, was planned in the vicinity.

BEWICK, THOMAS, reviver of wood-engraving in England, born at Oherryburn, near the village of Ovingham, Northumberland, Aug. 12, 1753, died Nov. 8, 1828. He was apprenticed, at 14, to Mr. Ralph Beilby, engraver, at Newcastle-on-

Tyne. Having executed, in wood, the diagrams for Hutton's treatise on mensuration (published in 1770) and other scientific works, he soon after attempted something better, and, at the age of 22, obtained from the society of arts a premium for his wood-engraving of the "Old Hound," one of a series of illustrations to Gay's fables. This success encouraged him, and, some years later, he illustrated a volume of select fables, by Mr. Saint. In 1790 the first edition of the "History of Quadrupeds," illustrated, was published by Mr. Beilby, who had received him into partnership. The designs in this, as well as in Bulmer's editions of Goldsmith's "Deserted Village" and Parnell's "Hermit," were drawn and engraved by Thomas Bewick and his younger brother, and pupil, John. Their beauty, novelty, and admirable execution attracted general attention, and George III. would not believe they were wood-cuts until he was shown the blocks. Somerville's "Chase" was the next work. All the engravings were by Thomas and the designs by John Bewick, who died of consumption, in 1796, the year it was produced. Thomas Bewick, who was now recognized as possessing a great deal more than mere skill, produced the first volume of his "British Birds," containing the land birds, in 1797. It ranks as the finest of his works. The 2d volume appeared in 1804, about which time the partnership with Mr. Beilby was dissolved. He published select fables by Æsop and others, illustrated, in 1818, after which he was busy preparing for an illustrated history of fishes, which never was completed. Among his pupils, who were numerous, Luke Clennell and William Harvey have most distinguished themselves.

BEX, a small but beautifully situated town of Vaud, Switzerland, on the right bank of the Rhone, 12 miles above its entrance into the Leman; pop. 2,854. It is much frequented by tourists, in the summer. It was long famous as being the only place where salt was deposited in Switzerland.

BEXAR, a province of the Spanish colony of Texas, now a county of the state of Texas. Under the colonial government Texas was, in 1688, divided into 3 prefectures, of which Bexar was the westernmost, and first of all colonized by missions and military posts, and, in 1718, by a colony of a dozen Spanish families, from the island of Madeira. At that time, and up to the creation of the independent state of Texas, Bexar contained over 100,000 sq. m., with the following thinly peopled settlements: San Antonio, with the missions of San José, San Espada, San Miguel, and Concepcion, and that of the Alamo; Laredo, Palafox, Corpus Christi, Victoria, Gonzales, and a few villages opposite El Paso. San Antonio de Bexar was the seat of the provincial government, and, for some time, of the colonial government of Texas. At different times, the frontier of Bexar toward Tamaulipas and Coahuila was different, now the Nueces and then the Sierra Madre being regarded as the boundary, so that por-

tions of these two states belonged to Texas. Under the republican government Bexar was one of the earliest organized counties, and out of its territory were gradually taken over 80 of the present 105 counties of Texas. The public domain of Texas is divided into 8 different land districts, of which Bexar with its ancient boundaries is one. San Antonio, its capital, is the seat of one of the 8 Texan land offices, where the largest transactions in landed property in Texas are made. The population of the county of Bexar, in 1855, has been estimated at about 20,000, of which nearly one-half was in the city of San Antonio, being composed of about 6,000 Germans, 8,000 Mexicans, 5,000 Americans, 1,000 negroes, and a few hundred Frenchmen, and Indians of the Lipan tribe, now extinguished, and of the Mescalero tribe, now settled out of the county. In 1857, the "Texas Almanac" states the white population at 12,117, Mexicans 2,000, with 1,079 negroes. The county comprises an area of 8,960 square miles. Its surface is undulating and beautifully diversified. Prairies occupy about $\frac{1}{4}$ of the land, and timber grows along the water courses. The soil is generally sandy; the uplands are chiefly valuable for pasturage, but the river bottoms are highly fertile, producing corn and sweet potatoes. In 1850 the county yielded 82,975 bushels of Indian corn, 2,865 of oats, 1,968 of potatoes, 18,761 pounds of butter, and 5,225 of wool. There were 2 churches, 2 newspaper offices, and 114 pupils attending public and other schools. In 1857 there were 39,009 head of cattle, valued at \$277,860, and 3,798 horses, valued at \$123,820; the value of real estate was \$3,898,280, and the aggregate value of all taxable property, \$5,059,926. A railroad has been projected from San Antonio, the county seat, to Powder Horn, and one from San Antonio to the gulf of Mexico was commenced about 1856.

BEXLEY, LORD (NICHOLAS VANSITTART), an English statesman, born April 29, 1766, died Feb. 8, 1851. His father, descended from a German family, was an East India director, who perished at sea, in the frigate *Aurora*, bound for India, in 1771. Educated at Oxford, where he graduated in 1787-'8, Mr. Vansittart studied the law, and was called to the bar in 1791. He had scarcely any practice, but wrote several pamphlets, including letters to Mr. Pitt, in 1795, on the conduct of the bank directors. Abandoning the hope of success at the bar, and possessing an independent income, he became member of parliament for Hastings in 1796. By his speeches and tracts, he obtained the notice of ministers, and was sent, in Feb. 1801, on a special diplomatic mission to Copenhagen, but the Danish government, awed by Russia and France, refused to receive a British minister. Soon after his return, he was made joint secretary of the treasury, which office he held until 1804, when the Addington cabinet resigned. After this he was successively Irish secretary, secretary to the treasury, chancellor

of the exchequer, and chancellor of the duchy of Lancaster. When he ceased to be financial minister (after having held that office for 11 years), he was raised to the peerage as Baron Bexley, of Bexley, in Kent. He retired from public life in 1828, on a pension of £3,000, which he enjoyed for the remaining 28 years of his life. As he had no child, by his marriage with the first Lord Auckland's sister, the title became extinct at his death.

BEY. See BEE.

BEYKANEER, BEEKANEER, or BICKANEER, one of the states of Rajpootana, in the N. W. of Hindostan, between lat. 27° 30' and 29° 55' N., and long. 72° 30' and 75° 40' E.; area 17,676 sq. m.; pop. said to be 589,250. It is bounded N. by the British district of Butteana, E. and S. E. by the native state of Shekawuttee, S. by Joodpoor, and W. by Jessulmeer and Bahawalpoor. The greater part of the province is a barren, sandy desert. There are no running streams, and water is only obtained by sinking wells to an immense depth. Grain is imported, but horses, bullocks, and camels are raised in great numbers. The chief towns are Beykaneer, the capital, and Chooroo; the former, situated in the middle of a sterile plain, in lat. 28° N., long. 78° 22' E., is surrounded by lofty, white walls, and consists chiefly of mud huts painted red; pop. about 60,000. Chooroo, though lying among sand-hills, is a handsome town, the houses constructed of white limestone. The rajah of Beykaneer acknowledges the sovereignty of the British government. He maintains an army of 5,000 men, and his revenues amount to £65,000 per annum.

BEYLE, HENRI, a French author, more widely known under the pseudonyme of Stendhal, born in Grenoble, Jan. 28, 1783, died in Paris, March 23, 1842. Under different fictitious names he published several works more or less important in art and literature, viz.: a "History of the Italian School of Painting," the lives of Haydn, Mozart, Metastasio, and Rossini, a "Study on Racine and Shakespeare," "Rome, Naples, and Florence;" *Promenades dans Rome*, &c., &c. A volume of his, entitled *De l'amour*, excited a good deal of curiosity at the time, and is yet read with a lively interest. But the most remarkable of his writings were two romances: *Le rouge et le noir*, and *La chartreuse de Parme*, the latter, a novel of Italian life, being considered generally as one of the most remarkable works of modern French literature. Some critics, among whom was the celebrated H. de Balzac, proclaimed it to be a masterpiece. No Frenchman ever knew Italy more thoroughly than Henri Beyle. Perfectly familiar with the language, so as to write in Italian a pamphlet (*Del romanticismo nelle arti*); passionately fond of that beautiful and interesting country, where he spent many years of his life; acquainted as well with the history of its past as with the characteristics of its present condition; endowed with a clear intellect and warm feeling in every matter of art; a bold thinker

and free writer; he seemed to be the very man to win at once a high position in the literary world. Still, whether because of the different names affixed to his books, or from the nature of his genius being congenial only to the few, he was more appreciated and honored after his death than during his life. His principal works did not attain a real popularity even in his own country, until they were reprinted, including, beside those above mentioned, a volume of Italian chronicles and tales: *L'abbesse de Castro; Les Cenci; Vanino Vanini, &c.*, gathered from the *Revue des deux mondes*, where they were first published.

BEYRAMIOH, the capital of the district of Troas, in Asia Minor, distant about 60 miles from the Dardanelles. It is a large town, regularly laid out, and well built. Many antiquities are to be seen in the neighborhood, including several monolithic granite sarcophagi.

BEYROOT, or BAIBOUT, the ancient Berytos, a flourishing seaport of Syria, on the river of the same name in the pashalic of Acre; pop. with the suburbs, 80,000. It traces its foundation to the Phœnicians, occupies a place in Roman and Jewish history, and was a school of law in the time of Justinian. It had its share in the vicissitudes of the crusades, and is the scene of the victory of St. George of Capadocia over the dragon. The modern Beyroot was built and restored by Djezzar Pasha, and considerably strengthened by order of the late Mehemet Ali. When he seized on Syria, the town sustained a bombardment, and was defended by Solymán Pasha, supported by Ibrahim Pasha with an army in the field; and on its evacuation, the allies landed and defeated the latter. The town is situated at the commencement of a plain backed by the ranges of Lebanon. The surrounding country is productive, and supplies of all kinds are abundant and cheap. The bay is large, with good anchorage.

BEYS, GILLES, a printer in Paris, died April 19, 1593, was noted for being the first to make a distinction in printing between the letters *i* and *j*, and *u* and *v*.

BEZA, or BESZE, THÉODORE DE, an eminent theologian and scholar of the 16th century, born in Vézelay, France, June 24, 1519, and died at Geneva, Oct. 18, 1605. Descended of noble parents, in affluent circumstances, and educated from early life by the profoundest scholars of the age, young Beza found himself at the age of 20 years a thorough Greek scholar, a licentiate of the civil law from the school at Orleans, and thrown upon an exciting life at Paris, with a fortune of 700 crowns a year from 2 church benefices, with a large addition from the death of an elder brother, and the prospect of a still greater one from the resignation of a church living in his favor by an uncle; for although he had been educated by Wolmar, his tutor, in the Lutheran doctrines, he contrived to quiet his conscience with his church crowns, and did not avow his faith until a later period. His

enemies in after life, when he took his stand as a reformer, averred that his life at Paris was any thing but creditable to his moral character. It is certain that he wrote and published amorous verses, and formed a secret marriage relation in order not to lose his church stipends. Of more than this it is difficult to accuse him with proof. But Beza's conscience was quickened, under an alarming disease, to an activity from which his pecuniary relations to the church had deterred it in health. On his recovery, in Oct. 1548, he went to Geneva, avowed at once and the same time his wife and his faith, and henceforth became an able advocate of the reformed religion. He seems to have incurred some censure in the early part of his career as a reformed controversialist, on account of a certain levity of manners which was probably the result of his Parisian life, passed, as it was, in the higher circles both of literature and fashion. But his brilliant talents and ardent zeal for the Lutheran doctrines gave him at once a high position in the reformation, which he preserved to the end of his life. He was elected professor of Greek at Lausanne, and from his contiguity to Geneva, used frequently to hear Calvin. A strong intimacy soon grew up between them. At Calvin's instance, Beza, while at Lausanne, completed Marot's version of the Psalms, and wrote a defence of the execution of Servetus, in which he supported the right of punishing heresy by the civil power, an opinion which he very much modified in his later days. In the growing division between the Lutherans and the Calvinists, Beza assumed the side of his patron and friend, the Genevan professor, whose professional chair he so soon came to support as Calvin's assistant lecturer, and finally was appointed rector of the newly organized university. During the persecution of the French Protestants, Beza undertook to influence the king of Navarre favorably for the reformed party, and was successful. As the result, the conference of Poissy was called in 1561, to attempt a reconciliation of the Protestant with the Catholic party. The edict of toleration promulgated in January of the following year, made it safe for Beza to proclaim the doctrines of the reformation in Paris, whither he had repaired at the solicitation of Oatharine, who thought his native country had a better right to his talents than Geneva. But the massacre of Vassy put an end to his prospects in France. He espoused the cause of the prince of Condé in the war that followed, and at its close returned to Geneva, where he took the chair of theology vacated by the death of Calvin. From that time he may be regarded as the head of the Genevan church, whose relations to the Lutheran party had now become sufficiently distinct. He was a diligent writer, as the catalogue of 59 works collected by one of his biographers abundantly attests. Among these works were many requiring great research and patient labor; among which may be mentioned his Latin translation of the New Testament, and his treatise on church polity,

which was the result of a correspondence between himself and the lord chancellor of Scotland on the revision of the Scotch ecclesiastical law, known as the "Second Book of Discipline." The name of Beza also deserves honorable mention in that sudden and powerful movement in Italy and France in the 16th century, celebrated as the *Renaissance*.

BEZA'S CODEX, an ancient MS. containing the Four Gospels and the Acts of the Apostles, written in Greek and Latin, on opposite pages. This MS. is in square uncials on vellum, and in quarto form. It has many chasms both in the Greek and Latin text. Many parts of the MS. are legible only with difficulty, indicating either great age, or want of proper care in preservation; probably the former, for there are other good evidences of the extreme age of this MS. The Latin version is the *Vetus Italica*, or the old Latin before its revision by Jerome, and his revision was made toward the close of the 4th century. To be sure, it does not follow that this MS. was written before the Jerome version (and most critics have refused to assign it so great antiquity); but in a fac-simile edition of the *Odex Bezae* published in 1798, at the expense of the Cambridge university, to whom it belongs, the editor claims for it a still greater antiquity on this ground, and also for the additional reasons that: 1, the MS. has the Ammonian sections; 2, it has not the Eusebian canons; 3, it lacks also the doxology at the end of the Lord's prayer. The bearing of these reasons on the antiquity of the MS. is briefly this: The Ammonian sections were a product of the 8th century, and the Eusebian canons of the 4th, while the interpolation of the doxology is of a still later date. But all these considerations plainly go for nothing. Hence the editor maintains that even the Ammonian sections were added by a later hand. This, he claims, would seem to indicate that the MS. was written before the sections, and when the sections were produced, they were added to the MS., and in the interim between the sections and the canons. It is evident that all this establishes no basis on which to rest a claim of antiquity for this MS., which shall throw it back of the 6th century, to which, with general consent, it is assigned by paleographers. Some consider the whole thing an English forgery. The editor maintains the opinion that it was originally written in Egypt, while others think that it is the work of some western Latinist. It has been charged with a marked conformity to the Anglo-Saxon version, which would make it a comparatively modern production. But the editor claims that its resemblance to the Syrian version is equally great. After all, the matter is of slight importance to Biblical literature, as not much stress has ever been laid upon this *Codex Bezae*. Beza presented it to the university of Cambridge in 1581. From the donor it has received its name, though sometimes it is designated, from its present ownership, *Codex Cantabrigiensis*. Beza says it was found in the

monastery of St. Irenæus, in Lyons. It is without punctuation.

BEZANT, a round unstamped gold coin, without impress or legend. It was brought into European circulation by the crusaders, but had probably been current in Venice, which had a large eastern commerce, before that time. It is supposed to have been the ordinary coin of the later Byzantine empire, and its name Bezan, *quasi* Byzant, records its origin. Its sterling value was 9s. 4½d., or about \$2 American currency.

BÉZIERS, a French city, department of Hérault; pop. in 1856, 28,557. It is the seat of a bishopric, has a Gothic church, college, and cavalry barracks, an aqueduct of Roman origin, and the ruins of a Roman amphitheatre, a public library, a tribunal of commerce, manufactories of silk stockings and gloves, cloth, brandy, parchment, verdigris, vinegar, and wine. It has a considerable commerce in tropical fruits, cork, and sardines. The Languedoc canal runs near it. In Roman times the town was called *Baterra*, also *Colonia Septimanorum*. The Visigoths, Saracens, and Franks possessed it in turns. The count of Septimania, who resided at Béziers, declared his independence in the 10th century, and then put himself under the protection of the county of Barcelona. In 1258, it was ceded to Louis IX., king of France. In 1209, this city was the scene of an Albigensian massacre. In the religious wars of the 16th and 17th centuries, it suffered much. An ecclesiastical synod was held here A. D. 856, to consult about the Arians. In the 13th century many synods were held here in consequence of the religious fermentation of the neighborhood.

BEZOAR (Persian *pasar*, a goat, or *pasachar*, against poison), a substance formerly used for medicinal purposes. It is a concretion, consisting chiefly of bile and resin, and is met with, as a calculus of a round or orbicular form, in the stomach, the intestines, the gall bladder, the salivary ducts, and even in the pineal gland, but mostly in the intestines of certain animals of the order ruminantia. They were once celebrated for their supposed medicinal properties, distinguished by the names of the animals in which they were found, or the countries from which they were brought, and eagerly bought for ten times their weight in gold. Beside being taken internally as medicines, they were worn around the neck as preservatives from contagion. It was customary in Portugal to hire them at the price of 10 shillings per day. Modern investigation and experiment have destroyed the charm of these wonderful calculi.

BHADRINATH, a town in northern Hindostan, situated on the right bank of the Bishengunga, celebrated for its temple of Vishnu, with a hot mineral spring in whose waters both sexes bathe indiscriminately, to wash away their sins. Some 50,000 pilgrims visit the place annually. The temple has been frequently overthrown by earthquakes. The principal idol is a figure of black marble, clothed in gold and silver

brocade while the season of pilgrimage lasts, and then stripped and stowed away in a vault the rest of the year. The Hindoos believe that in the neighboring mountains some holy anchorites have lived for several thousand years. Their place of habitation is a cavern perpetually choked with snow, which forbids the approach of the curious and the sceptical. The Bhadrinath peaks in the neighborhood are above 22,000 feet high.

BHAGAVAT-GITA, (divine song, or Krishna's revelation, *Σεπνεσιον μυσος*), or simply *Gita*, is the most important of the episodes of the *Mahabharata* (great India, so named from Bharata, the son of Dushyanta by Sakontala, being his patrimony), which is the second sacred Itihasa (traditional heroic history or epos, of the ancient Hindoos, the first being the Ramayana, or Rama's dwelling, by the poet Valmiki), written in the Sanscrit (concrete, perfect) language, about 4,000 years ago, by *Veda Vyasa Rishi* (science-collecting patriarch), who also collected the scattered leaves of the 8 older genuine Vedas (science of religion) and the older Puranas (ancient myths). The *Mahabharata* contains the legendary history of the Bharata dynasty, especially the wars between the Pandus and Kurus, the 2 branches of the progeny of the moon. Five Panduvi brothers, having been unjustly exiled by their uncle, return, after many wonderful adventures, with a powerful army, against the 100 Kurus, and, being aided by Krishna (the 8th avatar or incarnation of Vishnu, one of the Trimurti or trimorphy, trinity, proceeding from Bram, his milder form, descended from heaven in the beginning of the Kali-yuga, or counted age—viz., the present age of vice and of iron—about 5,000 years ago, for the redemption of mankind), defeat their more numerous host, on the plains of Kurukshetra, near Delhi; thus becoming the lords of India, from Persia to China, and from the Himalaya to Kanyakumari (virgin's cape, now Comorin). Anquetil du Perron supposes the *Gita* to be an independent work; and it is, indeed, absent from several manuscripts of the *Mahabharata*, in some others different from its other parts, and unconnected with them in the sixth book. The aim of this metaphysical, dogmatic, and ethical work appears to have been the union of all worshipers, and the abolition of the idolatrous Vedic dogmas. Though not polemic against the prejudices of men, it offers eternal bliss to true Brama-adorers, while it sends the worshippers of Devatas (lower gods, angels) to the lower temporal heaven, if they deserve it. On the whole there is an inkling of Buddhism in this magnificent Thespian poem, containing all the grand mysteries of the Braminic religion. It consists of 18 sections on the following subjects: 1, grief of Arjuna (gainer, the 8d son of Pandu, called also son of Bharat, of Kunti; favorite disciple of Krishna, after whose ascension to heaven he is inconsolable, although appointed executor of the revelation); 2, nature of the soul,

speculation; 3, works; 4, forsaking of works; 5, forsaking of the fruits of works; 6, exercise of the soul; 7, principles of nature, vital spirit; 8, purush (mankind); 9, chief of secrets, prince of science; 10, diversity of divine nature; 11, display of divine nature in the forms of the universe; 12, serving God in his visible and invisible forms; 13, explanation of *Kahattra* (defender, warrior; man of the second or regal class) and *Kahattriya*; 14, 8 *gun* (qualities); 15, *purushottama* (excellent man); 16, good and evil destiny; 17, 8 species of faith; 18, forsaking the fruits of action, for attaining eternal salvation.—Pantheistic, unitarian, and antivedic, it is kept secret from the vulgar castes by the jealous and overbearing Bramins, who dread lest by its tenets becoming popular they might lose their own control over the minds of the people. The form of the work is a dialogue between Krishna and Arjuna, reported by one Sanjaya to Dhrisharashtra, one of the Kurus. Arjuna does not wish to fight his kindred and bosom friends, but Krishna urges him to do this as his highest duty. This takes place on a splendid chariot drawn by white horses, standing between the 2 hostile armies, just before the battle. "Wise men are only sensible to duty, and not to pleasure or pain. I (Krishna) formed all existing things, clothing the incorruptible soul in the city with 9 gates (viz., the body, with 9 openings for the admission of external things), the which is corruptible. If slain, thou (Arjuna) wilt go to heaven; if victorious, thou wilt gain the world. Think not of consequences in acting. Be unselfish, subdue your senses and passions, which obscure reason and lead to deceit. Low men follow examples, great men give them. The wise does things homogeneous to his nature. He who follows me is saved by wisdom and even by works. As often as virtue declines in the world, I make myself evident to save it. The soul ought to free itself from the bonds of action and act absolutely according to its divine origin. There is but one God, all other Devatas being inferior and mere forms of Bram or of myself. Worship by deeds predominates over that by contemplation. The mortifications of the Sannyasin (4th or mendicant order of Bramins) and of the *Yogi* (joined to God), are subordinate to those of the *Tyagi* (renouncers), who work, but forsake the fruits of their deeds and go immediately into Bram," &c., &c. The *Gita* was translated into English by Charles Wilkins in 1785. The *Bhagavat-Purana* is the 18th and last of the *Puranas*, containing the history of Krishna; it was translated into French by Eugène Burnouf, Paris, 1840.

BHAMO, a town of Burmah, situated on the Irrawaddy, 40 miles W. of the Chinese frontier, and 180 miles N. N. E. of Ava. It is the centre of the trade with China, receiving woollen, cotton, and silk fabrics, by the winter caravans, from that country. The Shan tribes come hither to exchange their produce for salt, rice,

and dried fish. Bharno has some 2,000 houses, chiefly occupied by Chinese.

BHATGAN, or **BEARGONG**, a town of northern Hindostan, in the valley of Nepal, lat. $27^{\circ} 8' N.$, long. $85^{\circ} 22' E.$ It is the favorite residence of the Bramins of Nepal, and is said to contain valuable Sanscrit libraries. It has about 12,000 houses, of a description superior to those found in most of the cities of Nepal.

BHAVANI KUDAL, a town of British India, in the presidency of Madras, at the junction of the Bhavani and Cavery rivers, containing famous temples of Vishnu and Siva.

BHEELS, one of the rude tribes of Hindostan, inhabiting chiefly the mountains of Candeish, and the wild country along the Nerbudda and Taptee. They are spare but active, and of dark complexion. They are addicted to robbery and disorder, and the British government have endeavored to reclaim them by organizing a military corps from among them, and subjecting the district to strict police. They, together with the Coolies and Ghoonds, are believed, upon good authority, to have been the aborigines of India, driven out of the plains into their mountain fastnesses by the invasion of the Hindoos. The Bheels joined in the great Indian mutiny of 1857-58, and met the British in several battles. Lieut. Henry, the superintendent of police, was killed in an attempt to dislodge them from a strong position in Candeish, and another engagement, fought Jan. 20, 1858, near the frontier of the nizam's territory, where the Bheels had mustered in great force, resulted in the loss of 50 European troops.

BHIRJAN, a town in the eastern part of Persia, situated 180 miles S. of Meshed, in the desert. It contains about 5,000 houses, of brick, a citadel, governor's palace, caravansaries, mosques, and baths. Carpets of excellent quality are made here.

BHOOL, a strongly fortified city of Hindostan, capital of the province of Outoh, lat. $23^{\circ} 15' N.$, long. $69^{\circ} 52' E.$, 85 miles N. of the gulf of Outoh; pop. about 20,000. It is enclosed by a strong wall of stone, flanked with towers, and contains a castellated palace, a mausoleum, and several temples. Bhoof is famous for its manufactures of gold and silver.

BHOPAUL, or **BOPAL**, an Indian state in Malwa, presidency of Bengal, between lat. $22^{\circ} 32'$ and $23^{\circ} 46' N.$, and long. $76^{\circ} 25'$ and $78^{\circ} 50' E.$; area, 6,764 sq. m.; pop. 666,872. It is ruled by a nawab, with a revenue, in 1843, of £220,000. The Vindhya mountains traverse the province. Bhopaul has a fertile soil, and is well watered by the Nerbudda, and several smaller streams. The capital, of the same name, is surrounded by a stone wall, much dilapidated from neglect. In common with nearly every part of Bengal, this state witnessed a rising of the sepoys against their British rulers, in 1857. Gen. Rose marched against the mutineers, and disarmed them at Seehore, Jan. 12, 1858. About 150 were tried by court-martial and shot, while many others were killed in trying to escape.

BHOWANIPOOR, a village of Hindostan, in the Bengal presidency, 96 miles W. of Dinagepoor. A fair is held here annually, in April, often attended by 100,000 persons.

BHURTPOOR, a state of Hindostan, lying between lat. $26^{\circ} 48'$ and $27^{\circ} 50' N.$, and long. $76^{\circ} 54'$ and $77^{\circ} 49' E.$, bounded on the N. and N. E. by the British district Goorgaon, S. E. and S. by the Gwalior dominions, and W. by Macherry; area, 1,978 sq. m.; pop. estimated at 600,000. Yearly revenue of the rajah, £170,000.—Bhurtpoor, the capital, 33 miles W. of Agra, is nearly 8 miles in circuit. The fort was formerly considered a place of great strength, and with the town was surrounded by a mud wall and wide ditch. Lord Lake made 4 attempts to storm it in 1805, without success, losing in the several attacks over 8,000 men. It was, however, finally surrendered by the rajah, who feared to prolong the defence. Lord Combermere stormed Bhurtpoor in 1826, having first destroyed a part of the wall by mining. The fortifications were afterward dismantled. Throughout the sepoy rebellion of 1857-'8, the city remained in the hands of the British.

BIAFRA, a kingdom in the western part of Africa, on the bay or bight of the same name, in upper Guinea, between the kingdom of Ouari and the river Gaboon. It is intersected by numerous wide river channels, which are the outlets of the river Niger, and the country between Benin and the capital town Biafra forms the delta of the Niger. The tract near the shore is low and swampy, but in the interior is the elevated region of the Cameroonian mountains; the principal rivers are the Gaboon, Cross, and Malinda, and the place most resorted to by European traders is George's town or Naango, on a creek of the Gaboon, about 45 miles from the sea. Lander was the first to demonstrate the existence of several mouths to the Niger, since in descending that river he left the main channel and arrived by a branch in the bight of Biafra.—**BIGHT OF BIAFRA**, an inlet of the Atlantic, forming the eastern part of the gulf of Guinea, on the western coast of Africa, between long. 5° and $10^{\circ} E.$, and extending from Cape Formosa on the N., to Cape Lopez on the S. It contains the islands of Fernando Po, Prince, and St. Thomas, and receives the waters of the Cameroons, Malimba, Mooney, Old Calabar, and several other rivers.

BIAGIOLI, **NICOLÒ** **JOSAPHAT**, an Italian linguist and critic, born near Genoa in 1768, died Dec. 13, 1880. At the time of the Austro-Russian invasion of Italy, in 1798, his patriotism rendered him obnoxious, and he was driven from his professorship and forced to abandon his country. He then retired to Paris, where he immediately obtained a professorship, and in that office delivered a course of lectures on the poets and prose-writers of Italy, which drew crowds of hearers. His annotated editions of Dante, Petrarch, and Michel Angelo, are highly esteemed.

BIALYSTOK, a province of western Russia,

in the ancient kingdom of Poland, between lat. 52° 8' and 53° 38' N., and long. 22° 30' and 24° 12' E. It is bounded N. and W. by Poland, and S. and E. by the Russian province of Grodno; area, 3,424 sq. m.; pop. 227,106. Its surface is flat, studded with sandhills, formerly densely wooded; climate temperate and moist.—The capital is of the same name. It lies on the little river Bialy; pop. 9,217.

BIANOHI, FRANCESCO, called *Il Frari*, an Italian painter, born at Modena, in 1447, died in 1510. He was the instructor of Correggio, according to Vidriani, and his works were esteemed for graceful design and agreeable coloring.—FEDERIGO, an Italian painter, born at Milan, toward the close of the 16th century. His paintings are numerous in Milan, and throughout northern Italy, and are held in high esteem. He wrote a volume of biographies of painters.

BIANCHINI, FRANCESCO, an Italian astronomer and antiquary, born at Verona, Dec. 13, 1662, died in Rome, March 2, 1729. He was greatly favored by Alexander VIII., Clement XI., and Innocent XIII. He spent 8 years in drawing a meridian from sea to sea in Italy. He left many valuable works.

BLARD, AUGUSTE FRANÇOIS, a French painter, born at Lyons, in 1800, first destined for the pulpit, and for many years of his boyhood attached to the choirs of the Lyons churches, studied in the drawing schools of his native city. In 1827 he was appointed professor of drawing on board a French corvette, which afforded him opportunities to visit Greece and Syria, and gave him so much taste for traveling, that he tendered his resignation in 1828, and went on an artistic exploring tour over Europe, Africa, Russia, Norway, Lapland, Finland, Spitzbergen, and Greenland. Spain suggested his pictures of *Une auberge Espagnole*, and *Une attaque de voleurs Espagnols dans la Sierra Morena*; Aboukir, *Des femmes près d'une citerne*, in the vicinity of that city; Arabia, *Le vent du désert*, and *Un santon au milieu des Bédouins*, and *Une caravane près d'une mare d'eau*, and *Le désert*; Egypt, *Un concert de Fellahs aux environs d'Alexandrie*; Africa, *La traite des nègres*; Hindostan, *La veuve d'un Brahmine allant au bûcher*; Lapland, *Le duc d'Orléans recevant l'hospitalité dans une tente de Lapons*; Spitzbergen, an *Aureola Borealis*, &c. In 1832, his *Famille de mendiants* received a gold medal at the Paris exhibition, and was purchased by the government for 2,000 francs. In 1833, his reputation was increased by the exhibition of his picture of the Arabian overtaken by the simoom in the desert. His most remarkable production at the exhibition of 1839 was the combat with the polar bears; and in the exhibition of 1841, especial admiration was excited by his "Norwegian Minister teaching the Laps," which is considered one of his most successful efforts. Some of his pictures, as, for instance, the "Slave Trade," are marked by a terrible sense of reality, which produces a powerful impression, especially upon the masses of people.

Numerous as his achievements are in this branch of art, his popularity in France is due rather to his burlesque pictures of French characteristics and incidents.

BIARRITZ, a maritime village of France, department of Basses-Pyrénées, pop. 2,410, 5 miles S. of Bayonne, with curious grottoes, a favorite annual resort of bathers, who come from all parts of Europe, and especially of the Basque mountaineers, who deem it an obligation to drink of the mineral waters once a year, as well as to bathe in the sea at Biarritz. Since 1856, the place has had additional importance from being the summer residence of Napoleon III. and his court. Among the most important edifices in Biarritz is the new church, built in 1855. The villa Eugénie, as the imperial residence is called, is an insignificant building, but convenient for bathing purposes. It occupies a low, barren spot, so close to the sea, that when the wind is high, the spray dashes against the windows.

BIAS. I. Son of Amythaon, and brother of the seer Melampus, wooed Pero, the daughter of Neleus; but her father declared that no one should have her save the man who brought him the oxen of Iphiclus. Bias obtained the oxen by the craft and courage of Melampus, and thus won the hand of the princess Pero. The daughters of Prætus, king of Argos, and other Argive women being afflicted with madness, Melampus undertook to cure them, on condition that Prætus should surrender a third of his kingdom to Bias. The condition, however unpalatable, was acceded to, and the brother of Melampus became an Argive potentate. II. BIAS OF PRIENE, flourished about the middle of the 6th century B. C. He was not only numbered among the 7 wise men, but was one of the immortal 4 to whom the term "Sophi" was universally applied. He was by profession an advocate. His abilities and eloquence, however, were only at the service of those who had right and justice on their side. He died amidst his fellow-citizens, at a very advanced age, after defending triumphantly the cause of a client, and while the officers of the court were collecting the votes of the diocasts, whose province it was to pronounce sentence.

BIBB. I. A central county of Georgia, with an area of 250 sq. miles, and traversed by the Ocmulgee river, and several small creeks. The surface is uneven. The soil in the valley of the Ocmulgee is fertile, but in other places is unproductive. In 1850, this county produced 3,394 bales of cotton, 225,275 bushels of corn, 30,812 of oats, and 80,240 of sweet potatoes. There were a number of factories within its boundaries, 15 churches, 5 newspaper offices, and 653 pupils attending schools. Value of real estate in 1856, \$1,059,888. Pop. 12,331, of whom 6,004 were slaves. Named in honor of Dr. William Wyatt Bibb, a former member of congress from Georgia. Capital, Macon. II. A central county of Alabama, with an area of 1,080 sq. miles, comprising a hilly and pro-

ductive tract of country, watered by the Cahawba and Little Cahawba rivers, which unite within its limits. It is rich in iron ore and coal. In 1850, it produced 4,648 bales of cotton, 348,455 bushels of corn, and 80,547 of sweet potatoes. There were several mills and factories in operation, 33 churches, and 400 pupils in the public schools. Pop. 9,969, of whom 2,861 were slaves. Capital, Centreville.

BIBBIENA, **Ferdinando Galli da**, an Italian architect and painter, born in Bologna in 1657, died in 1743. He was called Bibbiena from the name of the village in which his father was born. His designs were of the most sumptuous character, and procured him employment for many years with the duke of Parma and the emperor Charles VI. of Germany, for whom he painted decorations and architectural pieces, arranged public festivals, and conducted triumphal processions which were famous over all Europe. To him the stage is indebted for the invention and decoration of movable scenery. In 1725 he published a work on civil architecture. His father, Giovanni Maria, his brother, Francesco, and his son, Antonio, were all distinguished for the same tastes, and a considerable degree of the same facility and invention.

BIBERACH, a town of Württemberg, is situated on the Riss, 29 miles S. S. W. of Ulm, pop. 4,600. It contains 4 churches, a hospital, a college, and other institutions, with manufactories of linen, woollen, and paper, beside breweries and tanneries. Biberach was the birthplace of Wieland, and near the town are the mineral waters of Jordansbad.

BIBLE (Gr. *βιβλος*, a book), a name applied to the collection of sacred writings in the Old and New Testaments. The Greek word, *βιβλος*, applied equally to every book, primarily denoted the reed papyrus, which, among other uses, was prepared in leaves or sheets for writing. The Bible, then, is, by way of eminence, the book, the book of books, or the best book. This name was given to the collection of writings held sacred by the Jews and Christians, in the 5th century by Chrysostom, previous to which time it had been called by various titles, the "Scripture," the "Sacred Scripture," the "Divine Scripture," and each separate portion of the collection had its own name. The book lies before us in 2 general divisions, the Old Testament and the New; the word testament, which means covenant or bond, being used in both portions of the Bible to signify the terms of compact, or the conditions of communion, between man and God. The Old Testament, called the "Law," the "Law and the Prophets," the "Law, the Prophets, and the Psalms," the "Law, the Prophets, and the other Books," also, the "Scriptures," the "Holy Scriptures," the "Old Covenant," the "Books of the Old Covenant," was divided by the Jews into 3 parts, viz., the law, the prophets, and the sacred writings. The law comprised the 5 books of Moses; the prophets comprised the earlier prophets, so called—the books of Joshua, Judg-

es, Samuel and Kings—and the later prophets, 8 major, Isaiah, Jeremiah, and Ezekiel, and 12 minor, as enumerated in our present collection. Under the writings were included the "Five Books," Canticles, Ecclesiastes, Ruth, Lamentations, and Esther, with the poetical books, Job, Proverbs, and Psalms. In this latter collection were counted, beside, the books of Ezra, Nehemiah, Chronicles, and Daniel. The number of the books varied with their grouping. In our English Bibles we count 39. Josephus arranges them so as to equal in number the letters of the Hebrew alphabet, which was 22: according to his classification, Judges and Ruth make one book; the 2 books of Samuel, 2 of Kings, and 2 of Chronicles make 3 in all; Ezra and Nehemiah are 1, Jeremiah and Lamentations 1, and the 12 minor prophets 1. By another arrangement they counted 24; by yet another, 27. There was a difference, also, in regard to the order in which the books should be placed. The Jews were not agreed on this point among themselves. The Alexandrian translators varied again from the Jews. The order existing in our Hebrew Bibles is very ancient, and seems to have been adopted by the Greek Jews, not according to the chronological succession of the several writings, for books of widely different dates are placed side by side, but with a view to grouping the similar classes of composition together, the historical being placed first, the prophetic next, and the poetical last. The writings in the first division contain a history of the theocracy, or of the dealings of God with the people of Israel, and his rule over them, embracing a period of 3,500 years—a history in some parts fragmentary, but, on the whole, wonderfully continuous and complete when viewed as the work of many different hands, in widely distant epochs. This collection opens with the book of Genesis, which, beginning with the creation of all things, takes up the affairs of Israel as the matter of central interest on the earth, gives a family history of Abraham and his descendants, and tells how the people of God were separated from other nations and prosperously established in Egypt. The 2d book, Exodus, describes the deliverance from Egyptian bondage, the passage through the desert, and the covenant on Sinai, with the main features of the legislation. Leviticus continues the legislation, giving the laws which relate to the priesthood, the festivals, and the sacred ordinances. The 4th book, Numbers, contains a supplement to the divine laws, and narrates the weary march through the wilderness, and the opening of the contest for the possession of the promised land. In Deuteronomy, Moses, approaching the close of his career, reminds the people of their past experiences, recapitulates and amplifies the laws already given, exhorts them to obedience, appoints a successor, takes his first and final look at the promised land, and dies. Thus end the 5 books which recount the deeds of Moses. The book of Joshua continues the narrative, describes the conquest of

Canaan, the partition of it among the tribes, the leader's farewell exhortation to the people, and death. In the next book, Judges, we read of anarchy and apostasy, which followed the death of Joshua, the consequent defeat and subjugation of the Jews by the Philistines, and the exploits of heroes who were raised up for their deliverance. The books, or book, of Samuel contain the history of his administration as prophet and judge, the story of Saul's government as king, and the narrative of David's youth, advancement, and reign, till toward its close. The last passage of his reign we read about in the opening chapters of the book of Kings, which covers also the brilliant period of Solomon's rule, and the dark ages that succeeded, the revolt of the 10 tribes, the establishment of 2 hostile kingdoms, the overthrow of Israel, the continuance and the fall of Judah, and the fate of that portion of the nation which remained in the land. In this book we have also particular notice of the prophets who flourished in Israel and maintained the law of Jehovah, in conflict with wicked kings. The Chronicles are called in the Alexandrine version *Paralipomena*, things left over, or supplements, and seem to be composed of materials partly new and partly taken from the elder writings. These are accompanied by the book of Ruth, an episode in the long history, narrating with exquisite grace the circumstances attending the marriage of Boaz, David's great-grandfather, to Ruth, the beautiful Moabitess. And then, in Ezra and Nehemiah, books which the Hebrew and Greek Jews regarded as one, we take up the fortunes of the chosen people after their exile is ended, read the story of the restoration, and the temple-building, and the changes effected by Ezra, the "scribe;" read, also, of Nehemiah's return, the fortification, repeopleing, and consecration of the city, and the various reforms introduced by him. Thus the history is brought down to about 404 B. C. The book of Esther attempts to supply a gap by recording events supposed to have occurred in Persia during the captivity. But the historical writings, strictly speaking, close with Nehemiah.—While the historical books present the past fortunes of the Hebrew people, and trace the development of the religious ideas which lay at the foundation of their national life, the prophetic books show us the same ideas actually at work with the fears and the hopes of living men, show them as inspiring the friends of the old religion in their conflicts with unbelief and apostasy, and animating the nation with bright hopes of the future. In all literature there are no books like these, so severe in moral, so lofty in religious tone, so sublime in conception, so grand in expression, so rich in poetical imagery. They contain the utterances and writings of the prophets, given in different seasons of need, when internal faithlessness or external danger called urgently for the delivery of Jehovah's message. Covering a great extent of time, they are, of course, various in style and data, and they exhibit to us, not

only the struggles of the popular heart, but the foreign relations of the nation, in a way not attempted by the historical books.—The poetical books express the same ideas with the prophetic, partly in didactic and partly in lyric form. The didactic portion of them consists of 8 books, viz.: Proverbs, a collection of sententious maxims and wise discourses, recommending a good life; Ecclesiastes, an eloquent wail over the transiency of earthly things; and Job, a philosophical poem upon Providence, wonderfully rich in thought and diction, and pervaded by the Hebrew doctrine of resignation to the will of the mysterious Jehovah. The book of Psalms comprises the devotional lyrics of David and other bards. Lamentations is a collection of elegiac verses of a patriotic strain, resembling much the psalms of complaint. The only specimen of Hebrew amatory poetry of an idyllic cast is the Song of Solomon, which has been explained by many scholars, and perhaps was read by the Jews, as an allegory.—The New Testament supplies us with the only existing account of the origin and early spread of Christianity, and is composed of 27 books. Four contain the personal memoirs of Jesus; one (Acts) relates the actions and experiences of the apostles, especially of Peter and Paul; twenty-one are apostolical letters addressed to the several churches, 14 of which are ascribed to Paul, 2 to Peter, 3 to John, 1 to James, and 1 to Jude; and the collection closes with the Apocalypse. An ancient division of the New Testament books was into 2 portions, the Gospels and the Apostle, to which last were added the Acts and the Apocalypse. In the earliest period the 1st of Peter and the 1st of John were united in the same collection with the epistles of Paul; but subsequently the epistles were divided into the Pauline and the Catholic. A later classification makes 3 divisions: 1, the historical; 2, the doctrinal; 3, the prophetic. Of the historical books, two, the Gospels of Matthew and of John, are held to be the works of Christ's immediate disciples, and two, Mark and Luke, of disciples of his apostles. The 5th is ascribed to Luke. It is unnecessary to specify the contents of these writings. The epistles are letters called forth by the peculiar exigencies of the time, and while containing incidentally historical information of value, throw light upon the way in which the Gospel was commended to the Gentile world, and exhibit the developments of Christian doctrine in the apostolic and post-apostolic age. The Apocalypse is the only book of a strictly prophetic character in the New Testament. It holds substantially the same place there that the writings of Isaiah and Ezekiel hold in the Old Testament, differing from those chiefly in the symbolical and allegorical form of representation. It was written shortly after the death of the emperor Nero, and was designed to strengthen the heart of Christians against a threatening persecution, by the inspiring hope of the speedily approaching king-

dom of Christ.—For a period of not less than 1,000 years, learned men have been engaged in selecting, authenticating, and arranging in one volume the constituent portions of the Bible. The history of this undertaking, which is the history of the canon of the Old and New Testaments, will be found in its appropriate place. But the labor that has been spent upon this department of study, is as nothing compared with that which has been bestowed upon the correction and establishment of the Scripture text. The Hebrew text of the Old Testament, as we have it, presents these ancient writings after having been passed through many hands, and subjected to many revisions. Of the primitive text, in fact, of its condition previous to the formation of the canon, 175 B. C., there exists little information of a positive kind. The books, when first committed to writing, whenever that may have been, were probably inscribed on skins or linen cloth, later on the papyrus, and were preserved in the form of rolls. The letter used was the old Hebrew character, as it is called, the same as that found upon the coins of the Maccabees, and was probably of Phœnician origin. The numerous instances of words wrongly divided from each other, furnish one reason among others for believing that they were generally run together in a continuous line; though to this there seem to have been exceptions. There were no vowel points nor accents; the words were composed of consonants, the vowel sounds being supplied by the usage of the living speech. It was not until the time of Ezra, after the Babylonish exile, that the books of the law were subjected to a careful and critical examination. From this time to the close of the 5th century, great changes took place in the sacred text. The written character of the ancient Hebrew language was modified by the Aramaic chirography, until it took the square form, more nearly resembling the Palmyrene letters, which was adopted perhaps on account of its beauty. Simultaneously with this alteration in the written text, came another arrangement of it, with a view to its public reading, though this, too, became finally established only in the course of generations. Tradition, it is supposed, had in a general way prescribed the manner in which the reader's voice should emphasize words and balance sentences, but it was long before that mode was declared by any signs upon the MSS. The first step toward this was the separation of words from each other, and it was taken early in the Christian era. It was followed by the division into verses, which was suggested by the sense of the writing, and was marked in poetry very early by lines or blank spaces measuring the rhythm. In prose it was introduced later for the convenience of the synagogue, and was established by the close of the period we are considering. Before the distribution into sentences was completed, the necessity was felt of breaking up the text into sections of less or

greater length. The paragraphs, or "parashes," as they were called, were indicated upon the page by blank spaces, and were of 2 kinds, the open and the shut. All the books of the canon were then portioned off into sections. The book of the law consisted of 669 parashes, and these, in the absence of headings and running indices, were known and referred to by the subject that was most prominent in each; for example, parash "Balaam," parash "Bush," or "Deluge." For the careful reproduction of the text thus written and distributed, strict provisions were made. Nothing must be added, nothing taken away, nothing changed; letters, words, verses, sections were counted. Rules were made respecting calligraphy; special directions were given in regard to the way in which the MSS. were to be written; every letter that was larger or smaller, suspended or inverted, or otherwise unusual in its form, even if accidentally so written, was to be heedfully copied according to Talmudic law.—The next period in the history of the Old Testament text is the Masoretic, and is commonly reckoned from the 6th to the 11th century. It had become necessary to complete the studies of older scholars, and to perpetuate the traditions which then existed orally respecting the sacred writings. The living knowledge of the Hebrew speech was dying out, the number of learned men was decreasing. Who the scholars were that undertook the labor of the Masora, and what was the course of their labor, we cannot know. They were probably Jews of Palestine, and belonged to the academy which flourished at Tiberias after the time of Christ. The word Masora means a "collection of traditions," and the main object of the laborers in this field was to gather up and arrange the critical material of an older time. But the Masorites did more than this; they aimed at completing what had been commenced before; they would fix the reading of the text in all its parts, and their scrupulous care did much to finish and perfect it, particularly in regard to its grammatical construction. They collated MSS., noticed critical and orthographical difficulties, and ventured upon conjectures of their own. The notes they made were at first written in separate books, and jotted down without any attempt at order or arrangement; afterward for convenience sake they were copied as well as they could be, upon the margin of MSS., or even at the end of a book, a practice that led gradually to vast confusion. Attempts were even made to crowd the whole Masora upon the margin of MSS., and when the space was too small, as often it was, the annotations were appended to the text or omitted entirely. Since the completion of the Masoretic period, that is, from the 11th century, the labors of scholars have been spent in elucidating and perpetuating the Masoretic text. The MSS. had been divided into 2 classes, the sacred and the vulgar. The former contained the Pentateuch, and were very care-

fully revised. The others, in various forms, some written upon common paper in the shape of books, contained more or less of the Masora, and passed through several hands. They were all more modern than the first class. None of these date back as far as the Masoretic period: 4 or 5 belong to the 12th century; some 50 belong to the 13th, and for the following centuries the number increases. The oldest are the best. As these private copies were not so carefully guarded as the rolls of the synagogue, mistakes more easily crept in. Many of the most eminent Jewish scholars of the middle ages devoted themselves to the task of purifying the sacred text by the largest possible collation of MSS.; and in their writings mention is made of famous copies now lost of whose use they enjoyed the benefit. The work of Meyer Halevi of Toledo, in which he endeavored to restore a correct reading of the Pentateuch, was celebrated in the 13th century. When the invention of printing had made easy the exact reproduction and extensive multiplication of copies, an attempt was made to compare carefully the best MSS. extant, to collate with them the Masora, and thus to bring out a true and pure Masoretic text; an undertaking too large to be accomplished at once, and, therefore, but imperfectly executed at that time. The books were produced singly. The earliest printed portion of the Bible, the Psalter, was done in 1477, in small folio form, very carelessly, with many abbreviations, and not a few grave omissions. Later, about 1490, it was reprinted in 12mo, without date or place, and again in the same form with an index. The whole Pentateuch, with the points, the Chaldee paraphrase, and Jarchi's commentary, was printed in 1482, in folio, at Bologna. In 1486 appeared in 2 folios, at Soncino, the Prophets, early and later, with Kimchi's commentary. The entire Hebrew Bible was first printed at Soncino, in 1488. It was made partly from MSS., neither very old, probably, nor very good, and partly from editions of separate books already published. It was of unequal merit. This edition was strictly followed by the Gerson edition printed at Brescia, in 1494, from which Luther made his translation. It was the parent of the first rabbinical Bible of Bomberg, 1517 and 1518, and of Bomberg's manual editions from 1518 to 1521—of the editions of Robert Stephens, 4to, 1589 to 1544, and of Sebastian Munster's, printed at Basel, in 2 vols. 4to, 1536. The next independent edition prepared from a fresh comparison of MSS. was the famous Complutensian Polyglot (1522), the work of Cardinal Ximenes, assisted by the most eminent biblical scholars in Spain. No expense was spared to procure Hebrew MSS. from different countries. The Vatican and other libraries lent their treasures; and 14 years of preparatory labors were spent before the 1st volume, numbered as the 5th in the collection, was issued. The whole comprises 6 volumes: the first 4 contain the Old Testament in Hebrew, Latin, and Greek, with a Chaldee paraphrase, a

Latin version of which is given at the bottom of the page. The 5th volume contains the New Testament, with the Latin Vulgate. The 6th is occupied with indices, vocabularies, and other aids to interpretation. The text of the Complutensian Bible agrees closely with that of Bomberg's first edition of 1518. The third great original edition is the second of Bomberg's rabbinical Bible, printed in folio at Venice, 1525-'6. This embodies the labors of Rabbi Jacob ben Chajim, who revised the Masora word by word, arranged it, made an index, and availed himself systematically of its whole apparatus. It was reprinted several times in the 16th and 17th centuries. After these 8 independent editions, all that follow contain a mixed text. The Antwerp Polyglot, published 1569-1572, at the expense of King Philip II. of Spain, and therefore called the royal Polyglot, was composed from the Complutensian and Bomberg's just mentioned. Beside the texts in 5 volumes, 4 containing the Old and 1 the New Testament, 3 other volumes gave a valuable apparatus, critical, philological, and antiquarian. The various editions of Plantin followed the Antwerp Polyglot, as did those of Christ. Reineccius. It was the basis also of the Paris Polyglot (10 vols. folio, 1645), which gave the text in Hebrew, Samaritan, Chaldee, Syriac, Arabic, Greek, and Latin, containing for the first time in print the Samaritan Pentateuch. It was repeated again in the London Polyglot (6 vols. folio, 1657). Elias Hutter, in his first edition published at Hamburg in 1587, and 8 times reprinted, used the copies of Venice, Antwerp, and Paris. In 1611 the manual edition of Buxtorf was printed. Buxtorf undertook to improve upon Bomberg's Bible, and, as far as he could, conformed to the Masora, for whose text he had the highest respect, regarding it as the only perfect and inspired. The next important edition for which the oldest and best MSS. were collated was that of Joseph Athias, printed at Amsterdam, 1661 and 1667. Among the later editions that have followed this, the most noted from its new collation of MSS., careful selection of readings, and thorough correction of points, are those of Jablonski, Berlin, 1699; Van der Hooght, Amsterdam, 1705; of J. H. Michaelis, Halle, 1720; Houbigant, Paris, 1758; Simon, Halle, 1752, 1767; Kennicott, Oxford, 1776, 1780; Aug. Hahn, 1822, and G. Theile, 1849. Beside these editions which aim at bringing the Masoretic text near its perfection, critical helps are found in the Masora contained in the rabbinical Bibles of Bomberg and Buxtorf, and the various readings which are found in all the best editions. The toil and treasure expended upon this long series of editions, each of which was a triumph in its time, have not been wasted. The result on the whole is a text of these ancient and venerable books, not indeed perfect in every point and particle, but more excellent than might have been expected, a text that nearly corresponds with that of the books which Ezra collected and which constituted the oldest Hebrew canon.—The task

of purifying the Greek of the New Testament and bringing it to the perfection in which it is presented to us in our latest and best editions, was much less difficult than that of recovering the true text of the Old Testament. Still it was a work of no small magnitude. Not a fragment of writing from the hand of an evangelist or an apostle survived the early generations that used the original MSS. and wore them out. The primitive Christians, though setting a high value upon these productions, did not feel the importance of laying them sacredly aside. The greater their value, the more extensive their circulation, the briefer consequently their existence. The books of the New Testament were written after the custom of the time upon papyrus (2 John, 12th verse), or upon parchment, finer and more durable, which was beginning to take the place of papyrus (2 Tim. iv. 13), and were in the roll form. The writing itself, done with a reed and ink, was in uncial or large letters, and ran in continuous lines. There were no spaces between the words, there were no capitals or stops, and very few sentences; iota subscript, accents, and breathings were all omitted. The heading of the books, "according to Matthew," "according to Luke," &c., was added later, probably not before the whole collection of gospels was made. The epistles may have had their address marked upon them, though it was perhaps inferred from the opening chapters. The title "catholic" was bestowed on an epistle by the end of the 2d century. The earliest copies of these books were sought by individuals for private use. Hence it might easily happen that as copies multiplied they would vary more or less from the originals and from each other, through the carelessness, the mistakes, or the stupidity of many writers, who confounded letters, omitted and repeated words, or falsely divided them. Doctrinal prejudices had likewise some effect in corrupting the text during this uncritical and irresponsible period, but yet more injury was done by the caprices of calligraphists who took liberties with the spelling or the adornment of the MSS. Here and there they undertook to insert historical and geographical amendments; or again, in their anxiety to make the several books harmonize, they ventured upon interpolations or corrections which were by no means calculated to preserve the integrity of the writing. We must add to all this the glosses that were inserted in the text, and the marginal notes made by some learned scribe, and afterward by some dull transcriber introduced into the body of the MS. The number of the copyists was great. Ignorant men undertook the work because there was much of it to be done; and learned men undertook it to prevent its being done badly, but the amendments of the latter were sometimes as injudicious as the blunders of the former. The most famous copyists, the calligraphists of Alexandria, were not well acquainted with Greek or Latin, and no care, skill, or beauty of execution, could make amends for that de-

fect. A custom grew up very early of submitting every copy to an authorized revision, but it offered only a partial check to these corrupting causes. In the 4th and 5th centuries, the writings of the New Testament seemed to be arranged in groups according to certain literary or geographical affinities. They were divided into the eastern and the western, or, according to another description, into an Alexandrine and a Latin, an Asiatic and a Byzantine text. The Alexandrine type of the Greek text was in use among the oriental Jewish Christians who used the Greek version of the Old Testament. The Latin type was common, not only in the Latin copies but in the Greek copies which the Latins used. These groups were not wholly distinct from one another, and it is difficult to fix upon the peculiar reading that belongs to each. The MSS. of the Byzantine class present the most uniformity. Toward the close of the 4th century no single MS. was known that comprised the whole New Testament. At a considerably later period they were rare, and most of these contained also the Old Testament in Greek. The 4 Gospels were commonly written in one collection, and the Pauline epistles in one. The catholic epistles were classed with the Acts, though sometimes these 2 last collections and the Pauline were united. MSS. of the Apocalypse were the rarest. The Gospels were generally found in the succession in which we have them, though in some copies they were transposed. After the Acts usually came the catholic epistles. The order in which the letters of Paul stood varied much. The place of the Apocalypse was fixed by Athanasius at the end of the collection, as it stands at present. By the 4th century the papyrus had given place to parchment, and the form of the roll to that of the book. Breaks in the line and simple points were used. To meet the convenience of the public lecture, the books were measured off into pauses and sentences by lines, after the same manner with the poetical books of the Old Testament. It was not long, however, before other divisions of the text were adopted. In the 3d century Ammonius in making his harmony of the Gospels had broken up the text into hundreds of sections, and after the 5th century his arrangement was indicated upon the margin of nearly all the MSS. The Gospels were portioned out into chapters from a very early period, but the arrangement of chapters which prevailed most extensively, by reason of its being afterward printed, originated in the 13th century with Cardinal Hugo, who devised it while making a Latin concordance. Erasmus noted it in the margin of his Latin translation. It was repeated in the Complutensian Polyglot. Later still was the subdivision of the chapters into verses. The italic letter was not generally substituted for the uncial until the 10th century.—We have 41 collections of New Testament books in MS. from the 4th to the 10th century, their age being ascertained with con-

siderable certainty by the paleographers. To the 4th century belongs 1: the Vatican MS. (B), containing, with the Old Testament text, the whole of the New Testament, except the Apocalypse, the epistles to Timothy, Titus, and Philemon, and the last 4 chapters and half of Hebrews. To the 5th century belong 4: the Alexandrine (A), presented by the patriarch of Constantinople, in 1628, to Charles I., and preserved in the British museum; it is somewhat mutilated by the omission of nearly all Matthew, and portions of John, and 2 Corinthians; the codex Ephraim (O), known also as the Parisian palimpsest, almost unintelligible; 28 leaves of an Armenian palimpsest; and some fragments of the Gospel of John, now in the college of the Propaganda at Rome. To the 6th century belong 9: the codex Bezae (D), containing the Gospels and Acts almost entire in Greek and Latin; 2 palimpsest fragments of the 4 Gospels; 3 fragments of an ornamented parchment, part of which is at Vienna, part in London, and part in the Vatican; a palimpsest in Trinity College, Dublin; a codex of Paul's epistles in Greek and Latin, the Latin representing the oldest form of the translation undertaken in the 2d century, formerly in possession of Beza, now in the royal library at Paris; a MS. of the Acts, the gift of Laud, archbishop of Canterbury, to the Bodleian library, containing the Greek and Latin text of the book almost in perfection; the Coislin codex in the royal library of Paris, 14 leaves from a MS. brought from Mount Athos, containing fragments of 5 epistles of Paul; and a palimpsest comprising portions of the Gospel of Luke, brought from a Coptic cloister to the British museum. From the 7th century, we have but 2: one of them containing passages from the Gospels, the Acts, and Paul's epistles; and one known as the codex Tischendorf I., in the university library at Leipzig, 4 leaves with fragments of the Gospel of Matthew. From the 8th century, 7 MSS. have come down to us: 2 leaves with a portion of Luke; a palimpsest whose 14 leaves contain part of Mark; fragments of the Gospel of John in the Barberini library at Rome; a MS. with Luke and John complete, and scholia, partly critical, upon the margin, brought by Tischendorf from the East; the Basel codex, with a text of the 4 Gospels nearly complete; a MS. of the Gospels almost perfect in the royal library at Paris, the text resembling closely that of the Vatican MS.; and a copy of the Apocalypse, the Basilean codex, now in the Vatican. The 9th century gives us 18 MSS.: a complete one of the 4 Gospels presented by the Abbé des Camps to Louis XIV.; 8 leaves with some verses of the Gospel of John from Mount Athos; a MS. in the university library at Munich, with numerous fragments of the Gospels and a patristic commentary; a MS. of Gospels as far as John vii. 89 at Moscow; a fragment of Gospels, with Luke entire, and portions of the rest; a MS. of Gospels with Latin versions interlined, which corresponds with the Vulgate

rather than with the Greek; the codex Boreell in the university library at Utrecht, containing 4 Gospels with many omissions; the codex Cyprianus, brought from Cyprus to Paris, 1673, comprises the unmutated Gospels; the codex Augiensis, bought in Switzerland by Richard Bentley, and presented by Thomas Bentley to Trinity college, Cambridge, contains Paul's epistles nearly entire in Greek and old vulgate Latin, and the epistle to the Hebrews in Latin; a MS. of Paul's epistles in Greek and Latin; a codex of Acts at Modena, 7 chapters wanting; a MS. of the catholic epistles and those of Paul, at Moscow; a MS. containing the Acts, the catholic epistles, and Paul's, slightly mutilated, in a library of the Carthusian monks at Rome. From the 10th century we have 5: a perfect copy of the Gospels in the Vatican library; a MS. in the library of St. Mark's, at Venice, with the text of 4 Gospels complete; a codex of the Gospels in the British museum, brought from the East, defective; another in the city library at Hamburg; a copy of the Olermont codex (Beza's), now in St. Petersburg, in Greek and Latin, of small value. Of all these MSS., only 8 embrace the whole New Testament, and neither of these without considerable deficiencies. Of the rest, 27 contain the Gospels alone, 9 have small fragments of them, 10 have large fragments, and only 8 embrace the text wholly or nearly perfect. The book of Acts exists in full in but 8 codices. The catholic epistles are found in 5. The epistles of Paul are comprised more or less completely in 12, 9 of which give them almost entire.—Space does not allow us to dwell upon the labors of Christian scholars of the earlier centuries, to establish the text of the New Testament. We can do no more than mention the names of Irenaeus, Clement, and Origen, of Athanasius, Eusebius, Epiphanius, the Cyrils, Chrysostom, and Theodoret, among the Greeks; of Cyprian, Tertullian, Ambrose, Augustine, and Rufinus among the Latins; of Bede, who worked at the Acts of the Apostles; of Alcuin, who endeavored to purify the Latin text; of Photius in the 9th century; Suidas in the 10th; of Theophylact, Acumenius, and others, in subsequent ages. The fruit of their labors was not abundant. Fifty years elapsed after the invention of printing before an attempt was made to publish, by means of it, the original text of the New Testament. The 5th volume of the Complutensian Polyglot contained the Greek and Latin of the Christian Scriptures, based on MSS. of no very eminent worth, so far as may be judged. The volume was printed first of the whole set in 1514, but was reserved until the rest were finished in 1522. Before this, in 1516, Erasmus had issued the first Greek and Latin edition of the New Testament at Basel, constructing his text from 5 MSS. there, one of which contained the Apocalypse. A second edition, changed in some hundred passages, appeared in 1519; a third in 1522, in which he for the first time in-

serted the text 1 John v. 7, from the codex Montfort. A fourth edition (1527) was altered further, especially in the Apocalypse, according to the Complutensian, and in 1535 was repeated without much change. These two arrangements of the text were frequently reproduced. That of Erasmus, in particular, was reprinted 6 times in different cities. Famous at this time were the editions of Robert Stephens, a learned printer of Paris. One of these, printed at Geneva, 1551, presented for the first time the Greek text divided into verses. Theodore Beza's numerous editions, great and small, 1565 and onward, sprung from Stephens's, and after Beza's again were made those of the Leyden booksellers, the Elzevirs, of which the first 2 appeared in 1624 and 1683, and gave what has since been called "the received text." The Elzevir text, borrowed from Stephens' third edition of 1550, which in turn rested upon the fifth edition of Erasmus, had been in authority 100 years, when 3 editions appeared, distinguished by a more thorough collation of MSS. and versions, and by learned dissertations, historical and critical. The first of these was Brian Walton's, contained in the 5th volume of his Polyglot Bible, 1657. It presented the New Testament in Greek, Latin, Syriac, Arabic, and Ethiopic; a 6th volume contained the learned apparatus. The 2d was that of John Fell, published at Oxford, 1675. The 3d and most famous was that of John Mill, printed at Oxford, 1707. An improved edition was issued at Amsterdam, 1710, by Ludwig Küster. But much more thorough and rich than any of these was the edition of J. J. Wetstein, which was printed at Amsterdam in 2 vols. folio, 1751-'2. The dissertations had been issued anonymously 21 years before. This critical apparatus, derived from old MSS. and versions, from the fathers, from former editions and the notes of scholars, ancient and modern, long remained a treasury for biblical students. Contemporaneously with Wetstein, Joh. Alb. Bengel, a Swabian theologian, attempted to simplify the text by a new arrangement of MSS. and a separation of them into 2 families, the Asiatic and the African. His chief edition appeared in 1784. Semler followed in the track of Bengel, and both prepared the way for Joh. Jac. Griesbach. This ingenious and erudite scholar divided the authorities for settling the text of the Gospels into 3 principal classes, the western, the eastern, and the Byzantine; each representing, with more or less exactness, a standard text of its own. The first of these "recensions" he supposed to be the oldest, dating back in its origin to the time in the 2d century when the 2 collections, the "Gospel" and the "Apostle," were distinct. The eastern group, he supposed, sprung from the union of these 2 collections, and was very ancient. The MSS. which composed the Byzantine group arose in the 4th century, from the mingling of the eastern and western standards. Having thus systematically classified his authorities,

Griesbach laid down a series of rules for the recovery of the genuine text, and upon these, with vast research and critical ability, built his famous editions, the first of which, containing the first 3 Gospels, was published in 1774; the second, the great edition, in 1796 and 1806. The basis of Griesbach's text was the Elzevir *textus receptus*, which, however, he altered much, at the same time placing various readings at the foot of the page. Griesbach's system was vehemently opposed by C. F. Matthai, who examined more than 100 MSS. at Moscow, representing mainly the so-called Byzantine text, and published his results in an edition of the New Testament in 12 volumes, 1782-'88. Eichhorn, on the other hand, sustained Griesbach in his main positions. Eichhorn's theory of the formation of the Gospels, by additions to one original document, which each of the evangelists is supposed to have used and worked over, no longer holds a place in the regard of the best scholars. In 1830-'36, Aug. Scholz, who had travelled much and examined many MSS., published an edition of the New Testament upon the basis of the Byzantine text. This work has been very highly esteemed. To describe the critical labors of Karl Lachmann, whose stereotyped edition of the bare text was followed in 1842 and 1850 by his great Greek and Latin edition, with its array of authorities, would carry us too far. Some have looked upon his work as marking an era in textual criticism, and finally establishing the genuine reading of the New Testament; others, again, have criticized it severely, and pronounced it of little value. Between these judgments it is not our duty to decide. At present, the most conspicuous name in this department of scholarship is that of Dr. Tischendorf, of Leipsic. He published an edition in 1840. In 1842, this was followed by another at Paris. But, meanwhile, the author's views had been maturing; he had conceived a plan of reforming the criticism of the New Testament text; under the patronage of the king of Prussia, he travelled over Europe and in the East, making researches, the results of which appeared in a second critical edition of the New Testament, in 1849. In 1850 he put forth an edition of the text alone, and again, in 1854, a revised edition, with an attempted restoration of the Vulgate.—The ancient translations of the Old Testament have been of great value in preserving and interpreting the genuine Hebrew text, for they were made in some cases from MSS. that dated back far beyond the Masoretic period, and were executed with a very literal exactness. Of these, the oldest and most celebrated is the Greek version called the Septuagint, from the 70 members composing the Jewish sanhedrim, or, perhaps, from the 70 fabled translators, who, as the Jewish legend went, being shut up in separate cells, executed 70 distinct versions, which corresponded with each other word for word. It was commenced by Jews of Alexandria as early as 285 B. C.,

and was finished in the course of years by different hands, as is evident from the language in the several portions, and from the style which characterizes the separate books. The Pentateuch is pronounced by scholars the best portion of the work; other portions are unequal; here and there it is said to betray an imperfect knowledge of the Hebrew language. The Greek Jews, in the declining state of the Hebrew tongue, made great use of the Septuagint, and even the Jews of Palestine held it in high esteem until the Christians in the 2d century quoted it against them. From that time its reputation diminished. In Jerome's day there were 8 differing, yet authorized editions of the Septuagint in use: 1 in Palestine, 1 at Alexandria, and 1 in Constantinople. Hence the corruptions that mar the MSS. in our possession. The Septuagint was the parent of many translations in Latin, Syriac, Ethiopic, Egyptian, Armenian, Georgian, Slavonic, Arabic. Many oriental versions were made from the Hebrew, of uncertain date; among them the Targums, or "admirable versions," in Chaldee, the Samaritan Pentateuch, the Syriac translation called the Peshito, or "true," "simple," one of the oldest translations of the Bible, several in Arabic, and one in Persian. There were also other Greek versions, of which the most celebrated was that of Aquila, made about A. D. 140, and valuable on account of its anxious literalness. Fragments of it are preserved in Origen's Hexapla. But after the LXX. the most famous version from the Hebrew was the Latin version of Jerome, the basis of the present Vulgate. Jerome had previously undertaken a revision of the old Latin translation from the LXX. called the *Itala*, but the text of this ancient version was so much mutilated, and the text of the LXX. itself was so corrupt, that he was led back, or perhaps driven back, by the pressing urgency of his friends, to the original Hebrew, and commenced, A. D. 385, the new version, which he completed in 405. The work, though hastily, was, on the whole, well done. The translator made use of the Greek versions that were before him, as well as of the Arabic and the Syriac, always, however, comparing them with the Hebrew. The translation, having to contend with a superstitious reverence for the LXX., met with a doubtful reception, and made its way slowly into favor, but in the course of 200 or 300 years, it was highly regarded at Rome, and in other places;—not so highly that it escaped corruption from careless copyists, indiscreet revisers, ambitious critics, and reckless theologians. The old Vulgate (the *Itala*) and the new injured each other. Alcuin, early in the 9th century, bidden, and, as some think, aided by Charlemagne, revised and corrected Jerome's version by the Hebrew and Greek originals. Lanfranc, archbishop of Canterbury in the 11th century, revised it again, and "all the church throughout the western world rejoiced that it was illuminated by the light of this

emendation." The council of Trent, which met in 1545, apparently with a view of preventing the confusion that resulted from promiscuous labors upon the Vulgate, took it under the peculiar patronage of the church, and decreed (1546) that the edition "should be printed as accurately as possible." As it had become necessary to prepare an authentic edition of the authorized version, two popes, Pius IV. and V., addressed themselves to this task; learned men were assembled, a printing press was erected in the Vatican, a pontiff looked over the printed sheets, and the work was published in 1590; but it proved to be so imperfect that Gregory XIV. called another assembly of scholars to make another revision. This time the duty was more thoroughly discharged, and the *Biblia Sacra Vulg. Ed. Tert. V. Pont. Max. jussu recog.*, &c., the basis of every subsequent edition, was issued in 1592. The famous Belarmin, one of the translators, wrote the preface. Translations of the New Testament were made very early into all the tongues then spoken by Christians, but these are more interesting to the biblical scholar than to the general reader. A few words upon some of the more modern versions will however be in place here.—Portions of the Bible were translated into Saxon by Aldhelm, Egbert, Bede, and others, between the 8th and 10th centuries. The first English version known to be extant, is supposed to have been made in 1290. Wycliffe's literal translation of the Bible from the Vulgate into the popular English speech was finished in 1380, and multiplied by copying. This version has recently been printed in England. The first volume produced by Gutenberg's types, 1450-'55, was the Latin Bible, and it was a prodigious effort for the times. Hardly had the press completed it, when versions began to multiply. In 1523, William Tyndale, "finding no place to do it in all England," went to the continent, and there, at Worms, in 1525, printed his version of the New Testament from the original Greek. Coverdale, his fellow-laborer, finished his translation of the Old Testament in 1535, and this was followed by several editions of "Matthew's Bible," called also the "Great" Bible, or "Cranmer's," according to its editors. This was the authorized version under Edward VI. The "Genevan Bible" was a new and careful revision of Coverdale's, with annotations, and not being perfectly satisfactory to Bishop Parker, he undertook another version by the help of eminent scholars, which was called the "Bishop's Bible," published in 1568, with preface and notes. Its basis was the "Great Bible," and the "Genevan." A little later appeared the Douay Bible, the New Testament in 1582, at Rheims, the Old Testament in 1609-'10, at Douay, upon the basis of the authorized Vulgate. Our present English version was made by direction of James I., who, on motion of Dr. Reynolds, of Oxford, in the conference at Hampton Court, commissioned 54 divines to undertake the labor. Seven of the 54 died before

the task was commenced, but, in 1606, the books were distributed among the remainder in 6 portions, and the translation was diligently pressed. The "Bishop's Bible" was the basis, faithfully compared with the original, and corrected where it was defective. The whole, with chapters and headings, marginal glosses, and parallels, was completed and sent from the press of Robert Barker, in 1611.—In Germany, Martin Luther spent 10 laborious years, from 1522 to 1532, in executing that wonderful translation which has done so much for the Bible and for the language into which it was rendered. Several portions of the Scriptures he had translated into German before, for the use of the people, viz., the penitential and other Psalms, the Lord's prayer, the Ten Commandments, and other passages, which were often printed. It was not till toward the close of 1521 that he conceived the plan of translating the whole; but having commenced, the work proceeded rapidly. The New Testament was finished first; in a year came the Pentateuch; another year completed the historical books and the Hagiographa; two years more brought Jonah and Habakkuk, and the prophets were finished in 1532. It was all Luther's work. As the foundation he used the Brescia edition of 1494 (his copy is still preserved at Berlin), and with this the LXX., the Vulgate, and other Latin versions, while for the New Testament he took the text of Erasmus, 1519. Many versions have been made since Luther's, in Germany, but for vigor, simplicity, and beauty, his has not been surpassed, not even by the noble one of Augusti and De Wette.

BIBLE SOCIETIES, societies and associations having for their object the circulation of the Bible in the vernacular of the people, or a language which they understand. So early as 1698, a society for the promotion of Christian knowledge had been organized in Great Britain, out of which several similar organizations had sprung, in different parts of the kingdom, previous to 1792. All these societies embraced the circulation of the Scriptures, as one of their objects. But it is believed that no society had been organized for the exclusive purpose of circulating the Bible without note or comment, previous to the era of the "British and Foreign Bible Society" (1804). But the work which the "Society for the Promotion of Christian Knowledge" had been doing, and perhaps more especially that which it refused to do, when solicited, prepared the way for a new era in Bible distribution. The society for the promotion of Christian knowledge had published an edition of Welsh Bibles. The supply was exhausted, and the destitution great. A missionary named Thomas Charles, who had labored for 20 years in the gospel, travelling through Wales, preaching and organizing Sunday schools, urged the matter of a new supply on the society. After many delays, the society issued an edition of 10,000 in 1796. This exhausted, Charles called for more. The call was disregarded, and he attempted an edition by subscription. This

also failed. Charles then went to London (1802), where he was introduced to the executive committee of the tract society, related to them the destitution of Wales, his desire for a new edition of the Welsh Scriptures, and proposed to organize a society for the purpose. One of the committee, the Rev. Joseph Hughes, a Baptist minister, much affected at Charles's account, replied, "Certainly; and if for Wales, why not for the world?" On this idea the committee acted. Hughes sent out a call for a meeting to take the project into consideration, and Steinkopf, a German preacher, offered to gather information concerning the foreign destitution of the Scriptures, while others were to collect similar data at home, for the purpose of laying it before the meeting. The meeting met pursuant to call, in London tavern, March 7, 1804, about 300 persons of all denominations, even Quakers, who till that time had never acted but in one instance with other Christian sects. Steinkopf made his report. It disclosed an unexpected state of affairs, and many influential persons present were so affected by it, that they immediately lent their coöperation to the work. The society commenced operations with a subscribed fund of £700, appointed a president, vice-president, secretary, treasurer, and an executive committee of 15 church of England laymen, 15 dissenting, and 6 foreigners. The members were to pay a guinea annually, and have a discount on Bibles. The first object was to supply Wales. The society, therefore, at once published an edition of 20,000 Bibles and 5,000 Testaments. So great was the interest of the Welsh population in the matter, that they drew the first load by hand through the city, with great rejoicing. The society soon had auxiliaries, both at home and on the continent. The greater part of these, however, were formed after 1812, in which year the foreign secretary of the home society visited the continent, and travelled through Denmark, Germany, and Switzerland. Nearly 80 such associations, with numerous branches, existed in different parts of the continent previous to 1816, or the era of the American Bible society. Many of these embraced both Protestants and Catholics, and several were instituted by Catholics themselves, though the authorities of the church did not always look with either favor or forbearance on the movement. A society formed in Ratisbon (1805), for translating into German and circulating the Bible, was abolished by a papal bull (1817). Another formed in Presburg, for the circulation of the Scriptures in Hungarian, was similarly dealt with. In many countries, the royal favor and coöperation were extended to the enterprise of the societies, as in Norway and Russia, though the society in Russia was abolished by royal ukase, in 1826, and the same year a Russian Protestant Bible society was formed. Now (1858) there exist 72 Bible societies with numerous auxiliaries, agencies, and branches, and these societies are distributed in almost all parts of the inhabited globe.—In 1816, the

"American Bible Society" was formed. Its first object was to supply the destitution of the Bible in the United States, and then, according to its ability, extend its influence to other countries, whether Christian, Mohammedan, or pagan. Previous to the American Bible society, the Bible society of Philadelphia had been formed (1808), and also one in Connecticut, and one in Massachusetts (1809), also one in Halifax (1818), and one in Antigua (1814). The American Bible society was formed in New York, and its receipts for the first year were \$37,779 85, and its circulation of Bibles and Testaments, 6,410 volumes. After an existence of 42 years, its receipts for the year ending April, 1858, were \$386,960, and its issues reached 712,114 volumes. In 1853-'4, the issues were 815,899 volumes. The total circulation of the Scriptures by the society up to the present year (1858), has been 12,804,083 volumes of the Bible, or parts of the Bible, in all cases without note or comment. In 1852, the society commenced the construction of a new building to accommodate its enlarged operations. The corner-stone was laid on May 11, and in a few days less than one year the new premises were ready for occupancy at a cost of \$308,000. The immense structure occupies an entire square, bounded by Third and Fourth avenues, and Eighth and Ninth streets, and covers nearly $\frac{1}{2}$ of an acre of surface, is 6 stories high, built of brick, with free-stone copings, and commands attention by its magnitude, proportions, and finish. In 1853 the constitution of the society was amended. In 1847 the managers of the American Bible society found that their Bibles, and those of England, had many small discrepancies which embarrassed the proof-readers. They therefore entered on a thorough collation of the English Scriptures, under direction of their committee on versions. That committee made a report of their doings in 1851. Their collator found but little short of 24,000 minor discrepancies in the text, but no one of which affected the sense. The committee, in addition to the collation of the text, which was thoroughly done, decided also to prepare a new series of chapter-headings. This, in 1857, caused great complaint on the part of many local societies and members, so that in January, 1858, the board felt it their duty to collate the headings of the English Bibles (as well as the text), and remove those which had been made new. The society sells and distributes its books in this country chiefly through its auxiliary societies, of which it has in the states and territories nearly 8,000. Twice in the course of its existence have the energies of the society been directed by special action to the work of supplying the destitute in our own country with the Bible, in 1829 and 1856. In addition to the intention of the society to supply every family with the Bible, where it finds a willingness to receive it, its funds are also expended in the work of translating and circulating the Scriptures in foreign lands. In pursuance of this work, the American Bible

society has aided foreign missionary societies in all parts of the world, with its own issues, and also with funds to enable them to translate and print on missionary ground.—The "American and Foreign Bible Society" was established in 1837, and incorporated by the legislature of New York, April 12, 1848. It was formed by a secession of the Baptists from the American Bible society. The design of the latter society was stated at its organization to be the dissemination of the Scriptures in the received versions where they exist, and in the most faithful translations, where they may be required. The latter clause left it to the discretion of the managers to decide what versions should be deemed worthy of patronage, and in the exercise of this discretion they refused aid to the existing Bengalee and Burmese versions, because the Greek word βαπτίζω was translated in those versions by a word corresponding to the English "immerse." During the year 1856-'57 the American and foreign Bible society put into circulation 93,000 copies of the Scriptures, beside employing 92 Bible readers, or persons who visit families for the purpose of reading to them the Bible, for religious conversation and prayer, who were distributed through this country, Canada, Mexico, Germany, Denmark, Sweden, China, and Greece. The whole amount of receipts for the same year was \$56,649 49.—"The American Bible Union" was organized in New York, June 10, 1850. Its object is "to procure and circulate the most faithful versions of the sacred Scriptures, in all languages throughout the world." Its founders seceded from the American and foreign Bible society May 23, 1850, when that body decided that it was not its province or duty to revise the English Bible, nor to procure a revision of it from others; and that in its future issues it would only circulate the existing commonly received version. The membership is composed of voluntary contributors, \$80 constituting a member, \$100 a director for life. Its contributors for membership in 1858 are about 15,000 persons, found in every portion of the United States, in Canada and Great Britain, and, indeed, wherever the English language is spoken. The field of its operations is the world. It has aided extensively in the preparation or circulation of versions made on its principles, for the Chinese, Karens, Siamese, French, Spanish, Italian, German, and English. It has just completed a revision of the Spanish New Testament, which is said to be superior to any other version in that language. A revision of the Italian New Testament has been published and widely circulated. But the primary aim of the union is to prepare a thorough and faithful revision of the common English version. To accomplish this it has employed the aid of scholars of nine evangelical denominations. Though mainly composed of Baptists, it professes to act without reference to denominational differences. The principle adopted for the guidance of translators is: Express in language most readily understood

by the people "the exact meaning of the inspired original." No views of expediency are allowed to withstand the invariable operation of this rule. The preliminary revision of the entire New Testament is in the course of publication, being sent forth for criticism among all classes of scholars, who are willing to examine it, and suggest any improvement. No expense has been spared in procuring books or supplying every possible aid for the greatest perfection of the work. This preliminary revision is subjected to careful examination and correction, by a learned committee composed of eminent biblical critics. The society publishes a quarterly journal, giving details of its progress, and a monthly with the revised Scriptures, as they may be ready for public examination. Since its origin it has issued of the Sacred Scripture, 287,800 copies, 48,109,600 pages; of quarterlies, tracts, &c., 880,801 copies, 11,689,204 pages. Total copies, 668,601; total pages, 59,748,804. The receipts have now reached the sum of \$45,000 per annum, and are steadily increasing. The library collected for its translators' use numbers more than 4,000 volumes, and comprises some of the rarest works on biblical criticism which can be found in the world.—The "Bible Revision Association" was organized in Memphis, Tenn., April 2, 1853. Its location is in Louisville, Ky. It has a board of 80 managers and executive officers. It occupies the southern and southwestern of the United States. It has a membership of about 3,000 persons, and is rapidly extending its operations, in conjunction with the American Bible union, with which it coöperates in the objects of its organization.—When the British and foreign Bible society was formed, the Bible was printed and circulated in 50 tongues; now it is printed and circulated in 166 versions, and in nearly all of these the British and foreign Bible society aided directly or indirectly, and in many of them the American Bible society had an important share. Ninety-nine new versions have been made, including 14 European languages, 15 Asiatic, 11 Polynesian, 11 African, and 7 American. Many of these were first made written languages by the societies. By the efforts of Bible societies, since 1804, have been circulated about 48 millions of copies of the Bible, either entire or in part.—But the history of Bible societies would be incomplete without mention of the controversy with regard to the Apocrypha, in which they were involved from about 1811, and which was not finally settled until 1827. The one idea of Bible societies, the circulation of the Scriptures without note or comment, had, to a certain extent, engaged all parties indiscriminately, and especially all parties of the reformation. The Catholic church had a different canon of Scripture from the Protestant. On the continent various causes had conspired to separate the Protestants less in this matter from the Catholics than their brethren in Great Britain. Consequently, on the continent, the Catholic canon was in use

among Protestants. At first, the London society had connived at this difference of sentiment, or at least had not allowed itself to interfere with its free exercise. Thus the German auxiliary societies had from the outset purchased for circulation the Oanstein Bible, in which the apocryphal books were intermingled with the canonical (Protestant). A feeling began to be manifest on this subject, perhaps, first, and certainly with greatest violence, in Scotland. The parent society decided, therefore, to request its auxiliaries to leave out the Apocrypha (1811). This request produced some feeling, and it was rescinded (1818). The apocryphal war was thus fairly commenced; for the passing and subsequent rescinding of the resolution of 1811 brought the parties into position. The inspiration of the apocryphal books was discussed, and the custom of the Protestant church cited, which had translated the Apocrypha, and even in the establishment appointed it "to be read in the churches." While the general sentiment was in favor of the non-inspiration of the apocryphal books, one party insisted on the propriety of their circulation, on the ground that the catalogue of the canon was not inspired, and that even the Protestant canon itself was not an article of faith, but might contain uninspired books. On the other hand, the anti-apocryphal party rigidly defined the difference between the canonical and apocryphal books, designating the apocryphal as "far below the level of many human writings, full of falsehoods, errors, superstitions, and contradictions, and the more dangerous for assuming to be a Divine revelation." The Scotch party was violent, the continental unyielding. The publication of the Catholic Bible in Italian, Spanish, and Portuguese, in 1819, with the coöperation of the society, added fresh fuel to the flames. It was thought by the Edinburgh society a violation of the act of 1818. It was urged that to publish a Bible in which the apocryphal books were made canonical, was worse than merely to publish them as apocryphal at the end of the Old Testament canon. The London society, on a revision of its course, decided it to be erroneous, and resolved, Aug. 19, 1822, that the moneys of the society should henceforth be used only in printing the canonical books, and that if the auxiliaries published the Apocrypha, they should do it at their own expense. When, in accordance with this act, Leander Van Eas asked aid in publishing his Bible, and promised to include the Apocrypha at his own expense, the society appropriated £500 for the purpose (Sept. 24, 1824). The anti-apocryphal party procured the rescinding of the act the following December, on the ground that the apocryphal books were still undistinguished from the canonical, and that, therefore, although the society's money was not used to publish them, they nevertheless had the apparent sanction of inspiration by the good company in which the society allowed

them to be put, by consenting to have them intermingled with the inspired books. The society, in rescinding the above act of appropriation, advanced only one step further in the apocryphal reform. It had, in the act of rescinding, declared that the money of the society might be applied to aid those editions of the Bible in which the apocryphal books were printed at the end of the canon. The anti-apocryphal party had already achieved too many victories to be satisfied with so moderate ground. The Edinburgh society now protested (Jan. 17, 1825) against this compromise of Protestantism, and procured, in the following February, a rescinding act which swept the records of the London society of all former acts on the subject. The matter stood now where it had before 1811, but the anti-apocryphal sentiment was conscious of its strength, and now initiated positive proceedings. A two years' contest followed, in which the ground was all reviewed, and the end of which was a resolution of the London society (May 8, 1827), that no association or individual circulating the apocryphal books should receive aid from the society, that none but bound books should be distributed to the auxiliaries, and that the auxiliaries should circulate them as received, and that all societies printing the apocryphal books should place the amount granted them for Bibles at the disposal of the parent society. Thus ended the controversy, a controversy which threatened for a time to split the parent society itself, and which did result in the secession of many auxiliaries on the continent. Previous to this controversy, the Roman Catholic church had in many instances (especially on the continent) acted with the Protestants. But, as already mentioned, that church had abolished the Bible society of Ratisbon (1817) in the midst of the contest. Meanwhile the London society continued the aid of its funds, under its successive prohibitions in reference to the Apocrypha, to the individual enterprise which still persisted, at Munich, in the circulation of the Bible. Gradually the Roman Catholic church withdrew its favor from an enterprise that refused its aid in the circulation of that which she deemed the canon of Scripture, until, from the coöperation which had characterized the early history of Bible societies, the movement became essentially Protestant. The American Bible society, made up of materials more thoroughly Puritanic and less Lutheran and continental, from the outset, was free from the distractions growing out of this dispute. That society has never published any other than the canonical (Protestant) books; and the only instance in which it has departed (if it be a departure) from the avowed principle of circulating the canonical Scriptures, without note or comment, is in the headings it has given to the chapters. In both the London and American societies the standard English version followed is that of King James.—One thing more remains to be

noticed, and that is the extreme cheapness of the Bible, under the auspices of the American Bible society. A good Bible for family use (the "brevier Bible" of the society) can now be had for 45 cents, while a nonpareil edition costs only 25 cents, and Testaments are as cheap as 6½ cents. This is partly the result of the donations the society receives, but more especially of the immense circulation the Bible has under its action attained.

BIBLICAL GEOGRAPHY. In the heart of the eastern continent, embraced by 5 seas, the Mediterranean, the *Ægean*, the *Euxine*, the *Caspian*, and the *Persian gulf*, lies a section of the globe which has been the arena of most of the events recorded in Scripture. Here the scene opens in *Genesis*, here the curtain of the flood falls on the first act, and here, in one of the coast-islands of the *Ægean*, occurs the closing vision of the *Apocalypse*. On the north, the great *Caucasian* wall spans the breach between the waters of the *Caspian* and the *Euxine*, the desert of salt flanks the eastern border from the *Caspian* to the *Persian gulf*, and the arid sands of *Arabia* complete the enclosure on the south. The territory thus bounded was unequalled in the fertility of its soil, the variety of its products, the facilities of its commerce, and the salubrity of its climate. It was fit to be the cradle of the race. A single mountainous system, the *Taurus*, cuts centrally across the entire area, dividing it into 2 nearly equal northern and southern portions. This chain, bifurcating in *Ararat*, sends one of its spurs to the head of the *Persian gulf*, and unites the other with the great *Persian range*. Dividing similarly at the head of the *Mediterranean*, it sends the southern or *Libanus* spur along the eastern shores of that sea, and distributes the other into those scattered and broken peaks which like sentries flank the semicircular coast of the *Anatolian peninsula*, until they meet the *Caucasus* on the north. Thus this whole sea-girt section is one vast water-shed with two culminating points, *Ararat* in the north and *Lebanon* in the south. It is well watered by large and numerous rivers, emptying into all these encircling seas, among which are prominent the *Euphrates*, the *Tigris*, the *Barada*, the *Orontes*, and the *Jordan*. Add to the territory thus described, a narrow strip on the southern shores of the *Mediterranean*, and the peninsulas of *Italy* and the *Peloponnesus* on the northern, and the area of biblical geography is complete. In this expanse are included *Babylonia*, *Assyria*, *Mesopotamia*, and *Chaldea* in the east, the extensive regions of *Asia Minor* and *Armenia* in the north, *Greece* and *Italy* in the west, and the peninsula of *Sinai* and *Egypt* in the south, while *Palestine* glitters in the centre of the whole. The more specific geographical features of these several kingdoms will be found under their appropriate heads. The study of biblical geography has a repulsive feature to the student in the almost universal changes of the names of localities in modern works, and the

consequent inability to identify many places possessing the profoundest interest and importance. Much has lately been done by the researches of travellers in the East, made in the special interest of Bible history. We may here mention with the highest encomium, the "Biblical Researches in Palestine and in the adjacent regions," by that indefatigable scholar, Dr. Robinson of this country; as also an admirable treatise, "Sinai and Palestine," by the Rev. Mr. Stanley, canon of Canterbury, England. Mr. Stanley well remarks in his prefatory advertisement: "Much has been written, and still remains to be written, both on the history and geography of the chosen people. But there have been comparatively few attempts to illustrate the relation in which each stands to the other." The influence of the geography of a country on its history, its poetry, and even its philosophy and religion, is very great, and it is not easy to overrate the value of such works as those above mentioned in illustrating the narrative and teachings of the Bible.

BIBLIOGRAPHY (Gr. *βιβλίον*, a book, and *γραφειν*, to describe), literally signifies the description of books. Among the Greeks the term *βιβλιογραφία* signified only the writing or transcription of books; and a bibliographer with them was a writer of books, in the sense of a copyist. The French term *Bibliographie* was long used to signify only an acquaintance with ancient writings, and with the art of deciphering them. In its modern and more extended sense, bibliography may be defined to be the science or knowledge of books, in regard to the materials of which they are composed, their different degrees of rarity, curiosity, reputed and real value, the subjects discussed by their respective authors, and the rank which they ought to hold in the classification of a library. It is therefore divided into 2 branches, the first of which has reference to the contents of books, and may be called, for want of a better phrase, intellectual bibliography; the second treats of their external character, the history of particular copies, &c., and may be termed material bibliography. The object of the first kind is to acquaint literary men with the most valuable books in every department of study, either by means of *catalogues raisonnés* simply, or by similar or alphabetical catalogues, accompanied by critical remarks. Considered as a distinct science, bibliography has been, and still is, cultivated most extensively in France, Germany, and Italy. This is owing, in a great degree, to the riches of the large public libraries of those countries, which are freely accessible to all, the great number of fine private collections, and the familiarity of their scholars and literary men with books of all ages and nations. To the researches of Barbier and Brunet, Ebert and Ersch, Tiraboschi and Gamba, the history of literature is deeply indebted. Great Britain can indeed boast of its rich public and private collections; but the use of them is limited, and hence the science has, until within comparative-

ly a recent period, received less attention there than upon the continent. The labors of Lowndes, Horne, Dibdin, and Watt, have of late years done much to promote its cultivation. In this country the science has been very naturally neglected. But the general diffusion of knowledge and wealth has led to the formation and rapid increase of public and private libraries; bibliography is therefore receiving increased attention, and the importance of its claims as a practical science is frequently and successfully urged by our leading educational and literary men. It is the fault of many of the votaries of bibliography, especially in France, that they have exaggerated the value of their favorite pursuit far beyond that rank to which it is fairly entitled in the scale of human knowledge; and Peignot, Achard, and others, have represented it as the most extensive, and even universal, of all sciences. Nothing certainly can be more absurd than to view it in this light, merely because it treats of books, and because books are the vehicles of all sorts of knowledge. Yet this is the only foundation that can be discovered for these extravagant representations, which tend, as in all other cases of exaggerated pretension, to bring ridicule upon a subject which cannot be regarded otherwise than highly important, when simply and correctly defined. Conformably to what has now been stated, it is the province of the bibliographer to be acquainted with the materials of which books are composed, and their different forms, the number of pages, the typographical character, the number and description of the plates, the completeness, correctness, and all the other external peculiarities or distinctions of an edition. He knows not only the treatises that have been written on any particular topic, their comparative value, and the various editions of books, but also in what important respects one edition differs from another; when and from what cause omissions have been made, deficiencies supplied, errors corrected, and additions subjoined. When books have been published anonymously, or pseudonymously, he indicates the real name of the concealed author; and with regard to the rarity of books, he is acquainted with all the causes which have contributed to render them scarce. Finally, as a library destitute of arrangement is a "chaos and not a cosmos," he disposes the books which it comprises, in such an order as will present an agreeable appearance to the eye; and in compiling a catalogue, he assigns to them that place which they ought to hold in the system of classification adopted for arranging a public or private collection of books. Such are the legitimate duties of the bibliographer, requiring a variety and extent of knowledge, seldom if ever possessed by a single individual. Hence different writers have discussed particular topics of bibliography; and from their united labors can be collected the multifarious information requisite to constitute the well-informed bibliographer. A collection of

all the works belonging to the various departments of this science, including general and special bibliography, would, it has been estimated, exceed 20,000 volumes. The more important of these are indicated or described in Namur's *Bibliographie paléographico-diplomatique-bibliographique générale*, 2 vols. 8vo. Liège, 1838; also in Peignot's *Repertoire bibliographique universel*, 8vo. Paris, 1812; Horne's "Introduction to the study of Bibliography," vol. ii., 8vo. Lond. 1814; Bohn's "General Catalogue," vol. i., 8vo. Lond. 1847; and Petzholdt's *Anzeiger für Literatur der Bibliothekwissenschaft*, an important German periodical commenced in 1840. For information upon certain points connected with bibliography, the reader is referred to the articles BOOK, BOOK-SELLING, BOOK-BINDING, CATALOGUES, DIPLOMATICS, ENGRAVING, LIBRARIES, MANUSCRIPTS, PAPER, PRINTING, and WRITING. The following elementary works treat generally upon all matters appertaining to this science. Although not very recent, and a part of them not well digested, they, nevertheless, contain much curious as well as useful information:

- ACHARD (C. F.) Cours élémentaire de Bibliographie. 8 vols. 8vo. Marseille, 1806-7.
BOULARD (S.) Traité élémentaire de Bibliographie. 8vo. Paris, 1806.
DENIS (M.) Einleitung in die Bücherkunde. 2d ed. 3 vols. 4to. Wien, 1795-6.
DREBIN (T. F.) Bibliographical Decameron. 8 vols. royal 8vo. London, 1817.
HORNE (T. H.) An Introduction to the Study of Bibliography. 3 vols. 8vo. London, 1814.
PEIGNOT (G.) Dictionnaire Raisonné de Bibliologie (with supplement). 3 vols. 8vo. Paris, 1802-4.
MORTILLARO (V.) Studio Bibliografico. 2d ed. 8vo. Palermo, 1882.

We purpose, in the further discussion of this article, to give a select list of some of the sources of information upon a few of the most important branches of bibliography, arranging them in alphabetical order under their appropriate heads, and adding occasional explanatory notes and remarks.

I.—The Origin and Progress of Writing, Manuscripts and Diplomatics, Monograms and Autographs, Materials for Writing or Printing, Engraving on Wood, Copper, Stone, &c.

The subjects belonging to this section have furnished topics for much elaborate research, and some of them for speculations and disputes not yet brought to any satisfactory conclusion. Our object is simply to indicate the inquiries which belong to different departments of bibliography, with some of the best guides to information upon each, leaving the discussion of the topics themselves for separate articles.

1. WRITING.

- ASTLE (THOS.) The Origin and Progress of Writing, as well hieroglyphic as elementary. A new edition of this important work has been published by Rowe, in 1 vol. royal quarto. Illustrated by Engravings. 3d ed. 4to. London, 1808.
CHAMPOLLION-FIGEAC (J. J.) Précis du Système Hiéroglyphique des anciens Égyptiens, avec planches. 2d ed. royal 8vo. Paris, 1838.
FORTIA D'URBAN. Essai sur l'Origine de l'Écriture, sur son Introduction dans la Grèce, et son Usage, jusqu'au Temps d'Homère. 8vo. Paris, 1882.
FRY (E.) Pantographia; containing accurate copies of all the known alphabets in the world, together with an Eng-

- lish explanation of the force or power of each letter. Royal 8vo. London, 1799.
SILVESTRE (J. B.) Paléographie universelle. Collection de fac-simile d'Écritures de tous les Peuples, et tous les temps, etc., et accompagnées d'Explications historiques et descriptives par M.M. Champollion-Figeac et Almé Champollion Fils. 4 vols. folio. Paris, 1869.
WAILLY (M. N. DE.) Éléments de Paléographie. 3 vols. royal 4to. Paris, 1888.

2. MANUSCRIPTS AND DIPLOMATICS.

- DELANDRE (A. F.) Manuscrits de la Bibliothèque de Lyon. Précédés d'un Essai sur les MSS. en général, &c. 3 vols. 8vo. Lyon, 1812.
ERRET (F. A.) Zur Handschriftenkunde. 2 vols. 8vo. Leipzig, 1886-7.
HUMPHREYS (H. N.) The Illuminated Books of the Middle Ages: An Account of the Development and Progress of the Art of Illumination, as a distinct branch of Pictorial Ornamentation, &c. Illustrated by a series of examples, of the size of the originals, by Owen Jones. Folio. London, 1849.
A splendid and costly work.
MABILLON (J.) De Re Diplomatica Libri Sex, cum Supplemento. 8d ed. 3 vols. folio (fine plates). Neapoli, 1789.
MONTAUDON (DOM B. DE.) Bibliotheca Bibliothecarum Manuscritorum Nova. 3 vols. folio. Paris, 1782.
NOUVEAU Traité de Diplomatique. Par deux Religieux Bénédictins de la Cong. de S. Maur. (M.M. Toussaint et Tassin.) 6 vols. 4to. Paris, 1750.
VAIHES (DOM DE.) Dictionnaire Raisonné de Diplomatique. 3 vols. 8vo. Paris, 1774.
A compendium of the larger and more costly works of Mabillon, Montaudon, Huet, Toussaint, Tassin, &c.

3. MONOGRAMS AND AUTOGRAPHS.

- BRULLIOT (F.) Dictionnaire des Monogrammes, Marques figurées, Lettres initiales, Noms abrégés, etc., avec lesquels les Peintres, Dessinateurs, Graveurs et Sculpteurs ont désigné leurs Noms. 2d ed. 8 parts, 4to. Munich, 1833-4.
"Ouvrage très important."—Bromet.
FONTAINE (P. J.) Des Collections des Autographes et de l'Utilité qu'on peut en retirer. 8vo. Paris, 1834.
FONTAINE (P. J.) Manuel de l'Amateur des Autographes. 8vo. Paris, 1836.
PEIGNOT (G.) Recherches historiques et bibliographiques sur les Autographes et sur l'Autographie. 8vo. Dijon, 1836.

4. MATERIALS FOR WRITING OR PRINTING.

- KOOPS (M.) Historical Account of the Substances which have been used to describe events and to convey ideas, from the earliest date to the invention of paper. 8vo. London, 1801.
LE NORMAND (L. S.) Manuel du Fabricant de Papiers, etc. (with plates.) 3 vols. 12mo. Paris, 1834.
PEIGNOT (G.) Essai sur l'Histoire du Parchemin et du Vellin. 8vo. Paris, 1812.
TAYLOR (ISAAC.) History of the Transmission of Ancient Books to modern times (containing the history of manuscripts, an account of the materials of ancient books, instruments of writing, inks, &c.) 8vo. London, 1837.
WEHRS (G. F.) Von Papier, &c. (With supplement.) 3 vols. 8vo. Halle and Hanover, 1789-90.

5. ENGRAVING ON COPPER, WOOD, STONE, &c.

- BARTHOE (A. DE.) Le Peintre Graveur. 21 vols. 8vo. Vienne, Degen, et Mechetti, 1808-21.
BRYAN (M.) A Biographical and Critical Dictionary of Painters and Engravers; with the Ciphers, Monograms, and Marks used by each Engraver. (New ed. revised and enlarged by Stanley.) Royal 8vo. London, 1849.
ENGELMANN (G.) Traité théorique et pratique de Lithographie. 3d ed. 4to. Paris, 1839.
HEINECKEN (M. LE BARON.) Idée générale d'une Collection complète d'Estampes, avec une Dissertation sur l'Origine de la Gravure. 8vo. Leipzig, 1771.
A valuable work, illustrated with 28 fine engravings.
FIELDING (T. H.) The Art of Engraving; being an historical and distinct account of the various styles now practised, with instructions as to the various modes of operation, &c. Royal 8vo. London, 1840.
JACOBSON (J.) A Treatise on Wood Engraving, historical and practical. Royal 8vo. London, 1839. With upward of 800 illustrations.
The author in the 2d chapter discusses the claims of Gutenberg and Coster to the honor of the invention of printing, supporting those of the former.
NAGLER (Dr. G. K.) Neues Allgemeines Künstler-Lexicon. 22 vols. 8vo. München, 1835-52.
The best and most extensive work of the kind extant, being a biographical dictionary, with critical notices, of the works of painters, sculptors, engravers, designers, lithographers, &c.
OTTLEY (W. Y.) History of Engraving upon Copper and

- Wood, with an Account of Engravers and their Works. 2 vols. royal 4to. London, 1816.
 SOREBY (S. L.) *Principia Typographica*. The Block-Books issued in Holland, Flanders, and Germany, during the 15th century. 8 vols. 4to. London, 1838.
 SPOONER (S.) *A Biographical and Critical Dictionary of Painters, Engravers, Sculptors, and Architects, with the Monograms, Ciphers, and Marks used by Distinguished Artists to Certify their Works*. 8vo. New York, 1858.

II.—*The Origin and Progress of Printing, and Early Printed Books.*

The history of the origin of this most important of all human inventions is enveloped in mystery, the most widely opposite opinions upon the subject being still entertained. Although within twenty years from its discovery it was spread all over Europe, commemorating all other inventions, and handing down to posterity every important event, it has unfortunately failed to record in decisive terms the name of its own inventor. To determine this, as well as the place where the discovery was made, has given employment to the studies and researches of the most learned men in Europe during the last 3 centuries. We can only point out some of the most important publications on the subject, together with manuals and dictionaries of the art, and such works as are particularly descriptive of early printed books.

- AMES (J.) *Typographical Antiquities; being an Historical Account of Printing in England, Scotland, and Ireland*. 3d edition, enlarged by Herbert. 8 vols. 4to. London, 1735-50.
A third and very costly edition was prepared by Dibdin, greatly enlarged, with copious notes, &c. 4 vols. 4to. London, 1810-19.
 AUDIFFREDI (J. B.) *Catalogus Historico-Criticus Romanarum Editionum Seculi XV. Also, Specimen Historico-Criticum Editionum Italicarum Seculi XV*. 9 vols. 4to. Roma, 1733-54.
 BANDINI (A. M.) *De Florentina Jantarum Typographia*. 2 vols. 8vo. Lucan, 1791.
 COTTON (HENRY.) *Typographical Gazetteer*. 3d edition, 8vo. Oxford, 1852.
 DAUBOU (P. C. F.) *Analyse des Opinions diverses sur l'Origine de l'imprimerie*. 8vo. Paris, 1808.
 DIBDIN (T. F.) *Bibliotheca Spencerciana; or, a Descriptive Catalogue of Early Printed Books, and of many important first editions in the library of Earl Spencer*. 4 vols. royal 8vo. London, 1814-15.
This library contained 45,000 volumes, mostly of rare and costly works.
 FALKENSTEIN (KARL.) *Geschichte der Buchdruckerkunst*. 4to. Leipzig, 1840.
 GREENWELL (W. P.) *Annals of Paridian Typography*. 8vo. London, 1818. Also, *View of the Early Paridian Greek Press*. 3 vols. 8vo. Oxford, 1838.
 HAIN (L.) *Repertorium Bibliographicum*. 4 vols. 8vo. Stuttgart, 1826-38.
Containing 16,299 articles describing with great accuracy all the editions of the 16th century known to the author.
 HANBARD (T. C.) *Typographia: An Historical Sketch of the Origin and Progress of Printing*. Royal 8vo. London, 1795. Also, *History of the Art of Printing, Copperplate Printing, Type Founding, and Lithographic Printing*. 8vo. Edinburgh, 1840.
 HODGSON (THOS.) *An Essay on the Origin and Progress of Stereotype Printing, including a description of the various processes*. 8vo. Newcastle, 1820.
Only 205 copies printed.
 JOHNSON (J.) *Typographia, or the Printer's Instructor*. 9 vols. 8vo. London, 1824.
 LAIRE (F. X.) *Index Librorum ab Inventis Typographia ad annum 1500 (with a Supplement)*. 3 vols. 8vo. Paris, 1791-2.
 MAITTAIRE (M.) *Annales Typographiques ad annum 1664, cum Supplemento Denisii*. 7 vols. (or 11 when the parts are bound up separately), 4to. Hag. Com. et Vienne, 1719-39.
 MEERMAN (G.) *Origines Typographicæ*. 2 vols. 4to. Hag. Com. 1763.
The great work in support of the pretensions of Lawrence Coster as the inventor, and of Haarlem as the birth-place of the art of printing.
 PARKER (G. W.) *Annales Typographiques ad annum 1554*. 11 vols. 4to. Norimb. 1798-1808.
The most extensive work extant on the productions of the 15th century.
 RENOUARD (A. A.) *Annales de l'imprimerie des Alde*. 2d edition, 3 vols. 8vo. Paris, 1835. Also, *Annales de l'imprimerie des Estienne*. 2 parts, 8vo. Paris, 1837-8.

- SANTANDER (M. DE LA SENA.) *An Historical Essay on the Origin of Printing*. Translated from the French. 8vo. Newcastle, Hodgson, 1819.
 SAVAGE (W.) *Dictionary of the Art of Printing*. Thick 8vo. London, 1841.
 BROWNE (C.) *The Printer's Grammar (with plates)*. 8vo. London, 1808.
 THOMAS (ISAAK.) *History of Printing in America, with Biographies of Printers, and an Account of Newspapers, &c.* 2 vols. 8vo. Worcester, 1810.
 TIMPERLEY (C. H.) *Encyclopædia of Literary and Typographical Anecdotes*. 2d edition, thick royal 8vo. London, 1842.
 WILLET (R.) *A Memoir on the Origin of Printing*. 8vo. Newcastle, 1820, pp. 72.
Only 150 copies printed.
 WOLFIUS (J. C.) *Monumenta Typographica*. 2 thick vols. 8vo. Hamburg, 1740.

III.—*Rare, Anonymous, and Pseudonymous Books.*

1. RARE BOOKS.

One of the objects of bibliography is to indicate those books which, to a greater or less degree, come under this category. With regard to these compilations we may remark, that though in most of them the epithet *rare* is sometimes applied too vaguely and lavishly, they are nevertheless, as a class, extremely useful. It is, indeed, exceedingly difficult to speak in all cases with precision in regard to rare books, and hence, perhaps, impossible to compile a work of this kind which shall not sometimes mislead those who consult it. A distinction should always be made between the terms *rare* and *precious*, which, while at first they appear to mean the same thing, are yet essentially different. A book may be rare because it is with difficulty to be procured, and hence highly valued by amateurs who desire the exclusive possession of it, regardless of cost. On the other hand, books may be precious, and to be obtained only at a high price, without being rare. Such are the splendid collections of architectural engravings published by Piranesi and others; the collections called galleries and cabinets; the great collections of works on antiquities by Gronovius, Grævius, Montfaucon, Muratori, and others. The following may be noticed as among the principal bibliographical works under this head, in addition to Audiffredi, Dibdin, Hain, Laire, Maittaire, and Panzer, described under the previous head.

- BAUER (J. J.) *Bibliotheca Librorum Rariorum Universalis*. (With supplement.) 7 vols. 8vo. Norimb. 1770-91.
 CLÉMENT (DAVID.) *Bibliothèque Carseuse; ou Catalogue Raisonné des Livres rares, et difficiles à trouver*. 9 vols. 4to. Göttingen and Leipzig, 1790-90.
Comes down no further than to the letter H.
 DIBDIN (T. F.) *A Bibliographical, Antiquarian and Pictorial Tour in France and Germany (containing a fund of information in regard to manuscripts, rare books, &c.)*. 8 vols. royal 8vo. London, 1821.
 DIBDIN (T. F.) *A Bibliographical and Pictorial Tour in the counties of England and in Scotland*. 3 vols. royal 8vo. London, 1838.
 FOURMIES (F. J.) *Nouveau Dictionnaire portatif de Bibliographie; contenant plus de vingt-trois mille Articles de Livres rares, curieux, estimés, et recherchés, &c.* 2d edition, 8vo. Paris, 1809.
 GERDESIUS (D.) *Florilegium Historico-Criticum Librorum Rariorum, &c.* 3d edition, 8vo. Groningæ, 1763.
 HARTSHORNE (C. H.) *Book Rarities of the University of Cambridge*. 8vo. London, 1829.
 OSMONT (J. B. L.) *Dictionnaire typographique, historique, et critique des Livres rares, singuliers, estimés, &c.* 2 vols. 8vo. Paris, 1763.

PRIGNOT (G.) *Essai de Curiosités Bibliographiques*. 8vo. Paris, 1804.

PRIGNOT (G.) *Variétés, Notices et Raretés bibliographiques*. 8vo. Paris, 1822.

PRIGNOT (G.) *Répertoire de Bibliographies spéciales, curieuses, et instructives*. 8vo. Paris, 1810.

SANTANDER (M. DE LA SERRA.) *Dictionnaire Bibliographique choisi du Quinzième Siècle; ou Description des Éditions les plus rares*, &c. 8 vols. 8vo. Bruxelles et Paris, 1806-7.

The first volume contains an elaborate history of printing, noticed under a previous head.

SCHNEIDER (J. G.) *Amoenitates Literaræ* (nothing rare books, &c.) 2d ed. 14 vols. 8vo. Lips. 1725-31.

VAN PRÆT (M.) *Catalogue des Livres imprimés sur Vellin, de la Bibliothèque du Roi*. 6 vols. 8vo. Paris, 1833-8.

VAN PRÆT (M.) *Catalogue des Livres imprimés sur Vellin, qui se trouvent dans des Bibliothèques publiques et particulières*. 4 vols. 8vo. Paris, 1834-8.

VOOR (J.) *Catalogus Historico-Criticus Librorum Rariorum*. 8th ed. thick 8vo. Norimb. 1793.

2. ANONYMOUS AND PSEUDONYMOUS BOOKS.

Anonymous books are those which are published without any author's name. Cryptonymous books are those whose names are concealed under an anagram, or similar contrivance. Pseudonymous books are those which bear false names of authors. The great number of works embraced under these classes renders this a very important branch of bibliographical inquiry.

BARBIER (A. A.) *Dictionnaire des Ouvrages Anonymes et Pseudonymes*. 2d ed. 4 vols. 8vo. Paris, 1822-7.

The best work on the subject; confined, however, to French and Latin books.

LANZOTTI (V.) *Pseudonimia Overo Tavole Alfabetiche de' Nomi*, &c. 8vo. Milan, 1836.

MAHNE (M. DR.) *Nouveau Recueil d'Ouvrages Anonymes et Pseudonymes*. 8vo. Paris, 1834.

PLACORIUS (V.) *Theatrum Anonymorum et Pseudonymorum*. (Edited by Fabricius and Dreyer.) 3d ed. fol. Hamburg, 1703.

To which should be added a supplement by J. C. Mylius, published in 1740, folio.

QUÉRAUD (J. M.) *Les Écrivains Pseudonymes et autres Mystificateurs de la Littérature Française*, &c. 8vo. Paris, 1854-5.

SCHMIDT (A. G.) *Gallerie Deutscher Pseudonymen Schriftsteller*, &c. 8vo. Grimma, 1840.

IV.—Oriental and Classical Languages.

BOHN (H. G.) *General Catalogue*. Part second. Greek and Latin Classics, Commentaries, and Translations. 8vo. London, 1850.

CLARKE (A.) *Bibliographical Dictionary*, with supplement. 8 vols. small 8vo. London, 1808-9.

DIEDIN (T. F.) *Introduction to a Knowledge of rare and valuable Editions of the Greek and Roman Classics*. 4th ed. 9 vols. 8vo. London, 1837.

ENGELMANN (W.) *Bibliotheca Scriptorum Classicorum, et Græcorum, et Latinorum*. (6th ed. of Enslin's *Bibliotheca*, enlarged, &c., with a supplement.) 8vo. Lips. 1847-58.

FABRICIUS (J. A.) *Bibliotheca Græca*, ed. Harles. 4th ed. 13 vols. 4to. Hamburg, 1790-1809.

FABRICIUS (J. A.) *Bibliotheca Latina*, ed. Ernesti. 3 vols. 8vo. Lips. 1773-4.

FABRICIUS (J. A.) *Bibliotheca Latina Mediæ et Infimæ Etatis*. 6 vols. 4to. Patavii, 1754.

HAIJ-KHALFA-MUSTAFA (B. A. K. I.) *Lexicon bibliographicum et encyclopaedicum*, &c. (A work on oriental bibliography, edited by G. Flügel.) 6 vols. 4to. Leipzig and London, 1835-52.

HARBLOR (B. D.) *Bibliothèque Orientale*, augmentée par Schulz. Best edition. 4 vols. 4to. La Haye, 1772-83.

HOFFMANN (B. F. W.) *Bibliographisches Lexicon der gesammten Literatur der Griechen*. 2d ed. 8 vols. 8vo. Leipzig, 1838-45.

HOFFMANN (B. F. W.) *Handbuch zur Bücherkunde für Lehre und Studium der beiden alten Klassischen und Deutschen Sprache*. 8vo. Leipzig, 1833.

MOSE (J. W.) *Manual of Classical Bibliography*. New ed. 2 vols. 8vo. London, 1837.

SCHWENKE (F. L. A.) *Handbuch der Klassischen Bibliographie*. 8 vols. 8vo. Leipzig, 1830-4.

WOLFJUS (J. C.) *Bibliotheca Hebræa*. 4 vols. 4to. Hamb. 1715-33.

ZENZKE (J. T.) *Manuel de Bibliographie Orientale*. 8vo. Leipzig, 1846.

V.—Bibliography of Modern Nations, or National Bibliographies.

1. AMERICA.

ASHER (G. M.) *Bibliographical and Historical Essay on the Dutch Books and Pamphlets relating to New Netherland*. 6 pts. small 4to. Amsterdam, 1855.

ASPINWALL (J.) *Bibliotheca Americana Septentrionalis*. 8vo. Paris, 1830.

BIBLIOGRAPHICAL CATALOGUE of Books, Translations of the Scriptures, and other Publications in the Indian Tongues of the United States. 8vo. Washington, 1849.

BIBLIOTHECA AMERICANA; or, a Chronological Catalogue of the most curious and interesting Books, Pamphlets, &c., upon North and South America. 4to. London, 1789.

DALRYMPLE (A.) *Catalogue of Authors who have written on the Rio de la Plata*, &c. 4to. London, 1807.

DUYCKINCK (E. A. and G. L.) *Cyclopedia of American Literature*. 8 vols. royal 8vo. New York, 1856.

FAREBAULT (B. G.) *Catalogue des Ouvrages sur l'Histoire de l'Amérique*. (Especially pertaining to those parts of America formerly in the possession of the French.) 3 pts. 8vo. Quebec, 1837.

KENNET (W.) *Bibliotheca Americana Primordia*. 4to. London, 1712.

LUDEWIG (H. E.) *The Literature of American Local History; a Bibliographical Essay*. 8vo. New York, 1844.

MEUSEL *Bibliotheca Historica*. Vols. 8 and 10.

Described under another head.

NORTON'S *Literary Register*; or, *Annual Book List for the year 1855*. 8vo. New York, 1856.

RICH (O.) *A Catalogue of Books relating principally to America, arranged under the years in which they were printed, from 1500 to 1700*. 8vo. London, 1832.

Containing 496 articles.

RICH (O.) *Bibliotheca Americana Nova, since 1700*. 8vo. London, 1835.

RICH (O.) *Supplement. 1701-1800*. 8vo. London, 1841.

The *Bibliotheca* and *Supplement* contain 2,522 articles.

RICH (O.) *Bibliotheca Americana Nova. 1801-1844*. (With an index.) 8vo. London, 1846.

ROOSEBAUGH (O. A.) *Bibliotheca Americana: Catalogue of American Publications, including Reprints and Original Works, from 1820 to 1852; with supplement to 1855*. Large 8vo. New York, 1855. Addenda to March 1, 1858.

TERNAUX-COMPAINS (H.) *Bibliothèque Américaine*. 8vo. Paris, 1837.

Contains the titles of 1,153 works published previous to the year 1700.

TRUBNER'S *Bibliographical Guide to American Literature*. 12mo. London, 1856.

WARDEN (D. B.) *Bibliotheca Americana; being a choice collection of American Books*, &c. 8vo. Paris, 1840.

The inquirer under this head will also consult *Literary World*, 15 vols. 4to. New York, 1847-'58; *Norton's Literary Gazette*, 8 vols. small folio, and 1 vol. 4to. New York, 1851-'4; *Norton's Literary Almanac and Register for 1852, 1853, and 1854*; *Publishers' Circular*, a weekly periodical commenced in New York in 1855, and still continued; *Portfolio*, 5 vols. 4to and 42 vols. 8vo. Phila. 1801-'27; *Analectic Magazine*, 16 vols. 8vo. Phila. 1818-'20; *North American Review*, *Christian Examiner*, *Methodist Quarterly*, *New York Review*, *Silliman's Journal*, *Democratic Review*, *Southern Quarterly Review*, and other leading periodicals of the day.

2. GREAT BRITAIN.

ANDERSON (C.) *Annals of the English Bible*. (Containing a list of the various editions, &c.) 2 vols. 8vo. London, 1845.

BELON (WM.) *Anecdotes of Literature and Scarce Books*. 8vo. London, 1807-'12.

BOHN (J.) *Catalogue of an Extensive Collection of English Books*. 8vo. London, 1839.

BYRDONS (S. E.) *Censura Literaria*; containing Titles, Abstracts, and Opinions of old English Books. 10 vols. 8vo. Lond. 1816.

BYRDONS (S. E.) *The British Bibliographer*. 4 vols. 8vo. Lond. 1810-'14.

BYRDONS (S. E.) *Restituta*; or, *Titles, Extracts, and Characters of old books in English Literature*, revised. 4 vols. 8vo. Lond. 1814-'16.

OSSTON (H.) *Editions of the Bible and Parts thereof in English*. 2d ed. 8vo. Oxford, 1852.

- GRIFFITH (A. F.) *Bibliotheca Anglo-Poetica*; or, a Descriptive Catalogue of a rare and rich collection of early English Poetry. 8vo. Lond. 1815.
- HUME (A.) *The Learned Societies and Printing Clubs of the United Kingdom* (with lists of their publications, &c.). 9d ed. post 8vo. Lond. 1858.
- LONDON CATALOGUE of Books, with their sizes, prices, and publishers; containing the books published in London, from 1700 to 1844. 8vo. Lond. various dates.
- LONDON CATALOGUE of Books published in Great Britain, 1801-55. 8vo. Lond. T. Hodgson, 1855.
- LONDON CATALOGUE. *Bibliotheca Londinensis*: A Classified Index to the Literature of Great Britain during 80 years; arranged from and serving as a key to the London Catalogue, 1814-44. 8vo. Lond. T. Hodgson, 1848.
- LOW (S.) *The British Catalogue of Books* published from Oct. 1837 to Dec. 1851. Vol. 1. General Alphabet. 8vo. Lond. 1852.
- LOWDES (W. T.) *The Bibliographer's Manual of English Literature*. 4 vols. 8vo. Lond. 1831.
Containing notices of upward of 50,000 distinct books. A new edition is now printing by Bohn, the first volume of which has already appeared.
- MAGEAY (W. D.) *A Manual of British Historians to A. D. 1600*. 8vo. Lond. 1845.
- MARTIN (J.) *Bibliographical Catalogue of Books privately printed in England*. 3 vols. imp. 8vo. Lond. 1884.
- MOULE (T.) *Bibliotheca Heraldica Magnæ Britannicæ: An Analytical Catalogue of Books on Genealogy, Heraldry, Nobility, Knighthood, and Ceremonies*. Royal 8vo. Lond. 1832.
- NICHOLS (J.) *Literary Anecdotes of the Eighteenth Century*. 16 vols. 8vo. Lond. 1812-43.
- PUBLISHERS' CIRCULAR and General Record of British and Foreign Literature. Vols. 1-20. 8vo. Lond. 1837-57.
- REID (J.) *Bibliotheca Scoto-Celtica; or, an Account of all the Books which have been published in the Gaelic Language*. 8vo. Lond. 1839.
- SAVAGE (J.) *The Librarian; being an Account of Scarce, Valuable, and Useful English Books*. 3 vols. 8vo. Lond. 1808-12.
- SMITH (J. R.) *A Bibliographical List of all Works Illustrating the Provincial Dialects of England*. 8vo. Lond. 1844.
- STEVENS (H.) *Catalogue of my English Library*. Post 8vo. Lond. 1858.
Giving a select list of 5,751 volumes.
- UPCOTT (W.) *Bibliography of Works on British Topography*. 3 vols. 8vo. Lond. 1818.
- WALPOLE (H.) *Catalogue of Royal and Noble Authors of England; enlarged by Park*. 5 vols. 8vo. Lond. 1806.
- WEIGHT (T.) *Biographia Britannica Literaria. Anglo-Saxon and Norman Periods*. (With lists of works, &c.) 3 vols. 8vo. Lond. 1842-6.
- WATT (R.) *Bibliotheca Britannica; or, a General Index of British and Foreign Literature*. 4 vols. 4to. Edin. 1834.
Vols. 1 and 2, alphabetical; vols. 3 and 4, index.

3. FRANCE.

- BIBLIOGRAPHIE DE LA FRANCE. (A bibliographical periodical commenced in 1810, and published at Paris in an octavo form.)
- BOSMANGE (H.) *Ma Bibliothèque Française*. Post 8vo. Paris, 1856.
Giving a select list of about 1,000 volumes of the best editions of standard French authors. Bosmange also published in 1845 a large octavo volume of foreign books, mostly French, arranged according to subjects, with prices, a general index, &c. He has since published two supplements.
- DESSERTE (N. L. M.) *Les Siècles Littéraires de la France*. (Bibliographical dictionary of French writers to the end of the 18th century, with supplements.) 7 vols. 8vo. Paris, 1800-3.
- DICTIONNAIRE Biographique et Bibliographique des Prédicateurs et Sermonnaires Français, par l'Abbé de la P. 8vo. Paris, 1834.
- GIRAULT DE SAINT-FARGEAU (A.) *Bibliographie Historique et Topographique de la France*. 4to. Paris, 1845.
- GONAN (P. M.) *Bibliographie Historique de la Ville de Lyon pendant la Révolution Française*. 8vo. Lyon, 1845.
- LELONG (Le P. J.) *Bibliothèque Historique de la France*. 5 vols. 8vo. Paris, 1768-78.
Containing 50,000 articles, 2 indexes, and a table of anonymous authors.
- QUÉRAUD (J. M.) *La France Littéraire, ou Dictionnaire Bibliographique, &c.* (18th and 19th centuries.) 10 vols. 8vo. Paris, 1827-39.
- QUÉRAUD (J. M.) *La Littérature Française contemporaine, 1827-49*. (Commenced by Quéraud, and continued by Felix Bourquelot.) 6 vols. 8vo. Paris.
- QUÉRAUD (J. M.) *Les Supercheries Littéraires Dévoilées, Galerie des Auteurs apocryphes, supposés, déguisés, &c. de la Littérature Française*. 4 vols. 8vo. Paris, 1847-53.
- VENTOULLIAC (L. T.) *The French Librarian*. 8vo. Lond. 1832.

Brunet's *Manuel du Libraire*, described under another head, although a general work, is very rich in French bibliography; so also is the *Bibliographie Universelle*, a bibliographical as well as biographical work, of the highest authority.

4. GERMANY.

- ASHER (A.) *A Bibliographical Essay on the Scriptores Rerum Germanicarum*. 4to. London and Berlin, 1843.
- BUCKNER (E.) *Bibliographisches Handbuch der Deutschen Dramatischen Literatur*. 4to. Berlin, 1837.
- ENGELMANN (W.) *Bibliotheca Geographica*. 2 vols. 8vo. Lips. 1853.
A classified catalogue of all the works on geography and travels published in Germany, from the middle of the 14th century down to 1846; with prices, index, &c.
- ENGELMANN (W.) *Bibliothek der Schönen Wissenschaft*. (A list of German romances, plays, and poems, published from 1750 to 1845.) 2 vols. 8vo. Leipzig, 1837-46.
- ENGELMANN (W.) *Bibliotheca Philologica*. (A list of Greek and Latin grammars, dictionaries, &c., published from 1750 to 1852.) 3d ed. 8vo. Lips. 1853. Also, *Bibliotheca Mechanico-Technologica*, 1 vol.—*Bibliotheca Scriptorum Classicorum*, 1 vol.—*Medico-Chirurgica*, 1 vol.—*Economica*, 1 vol.—*Veterinaria*, 1 vol.—*Zoologica et Palæontologica*, 1 vol.—*Bibliothek der Forst und Jagdwissenschaften*, 1 vol.—*Bibliothek der Handlungswissenschaft*, 1 vol.—*Bibliothek der Neuern Sprachen*, 1 vol.
- ESCH (J. S.) *Handbuch der Deutschen Literatur*. 2d ed. 4 vols. 8vo. Leipzig, 1822-45.
A classified catalogue of all the books published in Germany from the middle of the 18th century.
- HEINSIUS (W.) *Allgemeines Bücherlexikon*. (With 5 supplements.) 13 vols. 4to. Leipzig, 1812-49.
An alphabetical catalogue of all the books published in Germany, from 1700 to 1846; with sizes, prices, and publishers' names.
- HINZE (T. C.) *Verzeichnisse der Bücher, Landkarten, &c.* (Catalogue of all the books, maps, &c., including new editions, published in Germany from year to year, with sizes, prices, publishers, and classified indexes.) 63 vols. 12mo. Leipzig, 1797-1859.
Published by Hinrichs, in common with other booksellers.
- JULIUS (N. H.) *Bibliotheca Germano-Glotta*. 8vo. Hamburg, 1817.
- KATZER (C. G.) *Vollständiges Bücher-Lexikon, &c.* (With 8 supplements.) 13 vols. 4to. Leipzig, 1824-58.
An alphabetical catalogue, like that of Hinze, of all books, &c., published from 1700 to 1852.
- SCHWAB (G.) *Wegweiser durch die Literatur der Deutschen*. Ein Handbuch für Lein; herausgegeben von Gustav Schwab und Karl Klüpfel. 3d ed. 8vo. Leipzig, 1847.
An indispensable guide in the formation of a select German library.
- TAYLOR (W.) *Historic Survey of German Poetry*. 3 vols. 8vo. London, 1828-30.
- THIMM (F. L. J.) *The Literature of Germany, from its earliest period*. (With bibliographical notes, &c.) 12mo. London, 1844.

Ebert's "General Bibliographical Dictionary," described under another head, is especially rich in early German literature.

5. ITALY.

- BIBLIOGRAFIA ITALIANA. (A bibliographical periodical, commenced in 1835, and continued until the close of 1846.) 12 vols. 8vo. Milan, 1835-46.
- BIBLIOGRAFIA od Elenco Ragionato delle Opere contenute nella Collezione de' Classici Italiani. 8vo. Milan, 1814.
- BIBLIOGRAFIA dei Romanzi e Poemi Cavallereschi Italiani. (By G. de' Conti Melzi.) 2d ed. 8vo. Milan, 1838.
- BYDDEN (E.) *Res Literaria, Bibliographical and Critical*. (Principally upon Italian literature.) 5 vols. 8vo. Naples, Rome, and Geneva, 1821-2.
- CANTU (J.) *L'Italia Scientifica Contemporanea*. 8vo. Milan, 1844.
- FONTANINI (G.) *Biblioteca dell'Eloquenza Italiana, con le Annotazioni del Signor Apostolo Zeno*. 2 vols. 4to. Parma, 1808-4.
An index to this last edition was published in 1811.
- GAMBA DA BASSANO (B.) *Delle Novelle Italiane in Prosa*. Bibliografia. 3d ed. 8vo. Firenze, 1835.
A detailed account of the works of the Italian novelists.
- GAMBA DA BASSANO (B.) *Serie dei Testi di Lingua*. 4th ed. royal 8vo. Venezia, 1839.
A general Italian bibliographical dictionary, with copious notes and indexes.
- HAYN (N. F.) *Biblioteca Italiana, ossia Notizia de' Libri rari Italiani*. 2 vols. 4to. Milan, 1771-2.
- For the latest publications in Italy, the reader is referred to *Archivio Storico Italiano*, a periodical published in Florence.

6. SPAIN, PORTUGAL, AND NORTHERN EUROPE.

- ANTONIO (N.) *Bibliotheca Hispana Vetus ad annum 1500.* 3 vols. folio. Matriti, 1788.
 ANTONIO (N.) *Bibliotheca Hispana Nova, ab anno 1500 ad annum 1684.* 3 vols. folio. Matriti, 1788-8.
 BENTKOWSKIEGO (F.) *Historia Literatury Polskiej.* (History of Polish literature, exhibited in a list of writings, &c.) 9 vols. 8vo. Warsaw and Wilna, 1814.
 BOLWYN *Bibliografía Española.* 12mo. Madrid, 1840—
 A periodical similar to the *Bibliografia Italiana*.
 BOUTEWIK (F.) *History of Spanish and Portuguese Literature*, translated by Ross. 9 vols. 8vo. London, 1823.
 CASTRO (J. E. DE) *Biblioteca Española.* 3 vols. folio. Madrid, 1781-8.
 CASINI (M.) *Bibliotheca Arabico-Hispana Escorialensis.* 2 vols. folio. Matriti, 1760-70.
 MACHADO (P. D. B.) *Bibliotheca Lusitana Critica et Chronologica.* 4 vols. folio. Lisboa, 1741-50.
 NYERUP (R.) *Almindeligt Literaturlexicon for Denmark*, &c. 9 vols. 4to. Kjobenh, 1820.
 A universal literary lexicon of Denmark, Norway, and Iceland, giving an account of authors and their works.
 OTTO (F.) *History of Russian Literature, with a Lexicon of Russian Authors.* 8vo. Oxford, 1839.
 RECKE and NAFERKY. *Allgemeines Schriftsteller und Gelehrten-Lexicon der Provinzen Livland, Esthland, und Rurland.* 4 vols. thick 8vo. Mitau, 1837-38.
 SALVA (V.) *Catalogue of Spanish and Portuguese Books, with bibliographical remarks.* 3 vols. 8vo. London, 1826-7.
 TUCKER (G.) *The History of Spanish Literature.* 3 vols. 8vo. New York, 1842.
 WARMHOLST (O. G.) *Bibliotheca Historica Sueo-Gothica.* 16 vols. 8vo. Stockholm, 1782-1817.

VI.—General Bibliographies.

The works which are to be considered under this section, and the one following, sometimes called dictionaries, sometimes catalogues, and sometimes bibliotheca, constitute the most generally useful and interesting class of bibliographical publications. By showing what has been written in all the various branches of human knowledge, in every age and country, they act as guides to the inquiries of the learned; while by pointing out the differences of editions, &c., they constitute manuals of ready information for the professed bibliographer. Works of this class are called general or special, according as their object is to indicate books in all, or in one only, of the departments of science or literature. The former only aspire to point out rare, remarkable, or important books; for no attempt has yet been made, or probably ever will be made, to compile a complete universal bibliographical dictionary. On the other hand, it is the object of special bibliographies to notice all, or the greater part of those books that have been published on the subjects which they embrace; and hence their superior utility to such as are engaged in the study or investigation of any particular topic. It is by means of such works, says Dr. Johnson, that "the student comes to know what has been written on every part of learning; that he avoids the hazards of encountering difficulties which have already been cleared; of discussing questions which have already been decided; and of digging in mines of literature which have already been exhausted." The following are some of the most important works of this class:

- APPLETON'S *Library Manual*: containing a *Catalogue Raisonné* of upward of 12,000 of the most important works in every department of knowledge. 8vo. New York, 1847.
 BIBLIOTHECA Grenvilliana; by J. T. Payne and H. Foss. Part I., 2 vols. 8vo. Lond. 1842. Part II. 8vo. 1843.

- BORN (H. G.) *A General Catalogue of Books.* 8vo. London, 1841, pp. 4,100.

Commonly known as the "Guinea Catalogue." It is now reprinting in 2 volumes, 4 of which have already been published.

- BRUNET (J. C.) *Manuel du Libraire et de l'Amateur de Livres.* 4th ed. 5 vols. thick 8vo. Paris, 1842-4.

The most extensive and useful work of the kind extant, containing notices of 21,000 separate works.

- DE BURN (G. F.) *Bibliographie Instructive.* 7 vols. 8vo. Paris, 1768-8.

- DIEDIN (T. F.) *The Library Companion; or, the Young Man's Guide, and the Old Man's Comfort in the choice of a Library.* Thick 8vo. London, 1824.

- DICIONNAIRE BIBLIOGRAPHIQUE. (Compiled, according to Barbier, by the Abbé du Clos.) 8 vols. 8vo. Paris, 1790.

- EBERT (F. A.) *A General Bibliographical Dictionary, from the German.* 4 vols. 8vo. Oxford, 1837.

The original edition was published at Leipzig in 1811-20, in 3 vols. 8vo.

- GEORGI (J. T.) *Allgemeines Europäisches Bücher-Lexicon, 1500-1757.* (With supplements.) 8 vols. folio. Leipzig, 1742-58.

- GRAMME (J. G. T.) *Trésor des Livres rares et précieux, ou Nouveau Dictionnaire Bibliographique.* Livr. I., in large 4to (to be completed in about 16). Dresden, 1838.

- MEUSEL (J. G.) *Bibliotheca Historica.* 22 vols. in 11, 8vo. Lips. 1792-1804.

- NODDIE (C.) *Description Raisonné d'une jolie Collection de Livres.* 8vo. Paris, 1844.

- RENOUARD (A. A.) *Catalogue de la Bibliothèque d'un Amateur, avec notes bibliographiques*, &c. 4 vols. 8vo. Paris, 1819.

- SANTANDER (M. C. DE LA SERENA.) *Catalogue des Livres de la Bibliothèque de Santander, rédigé et mis en ordre par lui-même; avec notes*, &c. 5 vols. 8vo. Bruxelles, 1808.

VII.—Special Bibliographies.

The dictionaries and catalogues applicable to particular branches of knowledge, and comprising the works published on the subjects discussed, would of themselves constitute a library. In the present article, already extended beyond its original limits, we can only mention a few of the more important, in addition to those which have already been noticed under previous heads.

- ATKINSON (J.) *Medical Bibliography.* A and B. 8vo. London, 1824.

- BACKER (A. and A. DE.) *Bibliothèques des Écrivains de la Compagnie de Jésus.* Vols. 1 and 2. Royal 8vo. Liège, 1839-44.

To be completed in 2 volumes of 800 pages each.

- BÉRAUD (A. B. L.) *Essai Bibliographique sur les Éditions des Elzevirs.* 8vo. Paris, 1823.

- BLANQUI (M.) *Histoire de l'Économie Politique en Europe.* 2d ed. 2 vols. 8vo. Paris, 1842.

- BLAKE (C.) *Bibliographie Musicale de la France et de l'Étranger.* 8vo. Paris, 1822.

- BOUCHER DE LA RICHARDELLIE (G.) *Bibliothèque universelle des Voyages.* 6 vols. 8vo. Paris, 1808.

- BRIDGEMAN (R. W.) *Short View of Legal Bibliography.* 8vo. London, 1807.

- CAMUS (A. G.) *Profession d'Avocat.* 5th ed. 2 vols. 8vo. Paris, 1832.

An excellent work on jurisprudence and its bibliography.

- CLARK (A. and J. B. B.) *A Concise View of the Succession of Sacred Literature.* 3 vols. 8vo. London, 1830-2.

- DARLING (J.) *Cyclopædia Bibliographica: A Library Manual of Theological and General Literature.* 2 vols. royal 8vo. London, 1854-55.

- DE MOSSAN (A.) *Notices of Arithmetical Books and Authors.* Post 8vo. London, 1847.

- DUPIN (M.) *Manuel des Étudiants en Droit.* 12mo. Paris, 1835.

- DUPIN (M.) *Manuel du Droit public ecclésiastique Français.* 12mo. Paris, 1844.

Containing bibliographical notices of works upon law, &c.

- DUPLESSIS (G.) *Bibliographie Pæmologique.* (Bibliography of Proverbs.) 8vo. Paris, 1847.

- DEYANDER (J.) *Catalogus Bibliotheca Historico-Naturalis Josephi Banks.* 5 vols. 8vo. London, 1796-1800.

The most complete catalogue of books on natural history ever published. The collection now forms a part of the British museum.

- ELLIS (H.) *Catalogue of Books on Angling.* 8vo. London, 1811.

- ELMES (J.) *General and Bibliographical Dictionary of the Fine Arts.* 8vo. London, 1828.

- FORBES (J.) *Manual of Select Medical Bibliography.* Royal 8vo. London, 1835.

- HORNE (T. H.) *Manual of Biblical Bibliography.* 2d ed. 8vo. London, 1846.

HOYER (Dr. J. G. von.) *Literatur der Kriegswissenschaften und Kriegsgeschichte*. 12mo. Berlin, 1892-40.

LA LAMPE (J. DE.) *Bibliographie Astronomique*. 4to. Paris, 1908.

M'CULLOCH (J. R.) *The Literature of Political Economy*. 8vo. London, 1845.

MURHARD (F. W. A.) *Bibliotheca Mathematica*. 5 vols. 8vo. Lips. 1797-1805.

Containing the literature of arithmetic, geometry, mechanics, optics, &c.

ORME (W.) *Bibliotheca Biblica: A Select List of Books on Sacred Literature, with notices, &c.* 8vo. Edin. 1834.

OTTINGER (E. M.) *Bibliographie Biographique universelle*. (Dictionary of works relative to the public and private life of celebrated personages.) 2 vols. 4to. Bruxelles, 1854.

PERCHERON (A.) *Bibliographie Entomologique*. 2 vols. 8vo. Paris, 1887.

PLOUQUET (W. G.) *Literatura Medica Digesta*. 4 vols. Royal 4to. Tubinge, 1808-9.

POOLS (W. F.) *An Index to Periodical Literature*. 8vo. New York, 1853.

An exceedingly useful book, being a complete key to the contents of fifteen hundred volumes of standard American and English periodicals.

ROY (C. H. A.) *Catalogus Bibliothecae Medicæ*. 5 vols. 8vo. Amst. 1890.

TEBBAUX-COMPANS (H.) *Bibliothèque Asiatique et Africaine*. 8vo. Paris, 18--.

WALCH (J. G.) *Bibliotheca Theologica Selecta*. 4 vols. 8vo. Jenæ, 1757-65.

WALCH (J. G.) *Bibliotheca Patristica, Litterarum Annotationibus instructa*. New ed. 8vo. Jenæ, 1894.

WICKEL (R.) *Kunstflager-Catalog*. 8vo. Leipzig, 1845.

WINKE (G. B.) *Handbuch der theologischen Literatur*. (With a supplement.) 3d ed. 2 vols. 8vo. Leipzig, 1838-42.

BIBLIOMANCY, a method of consulting the future by means of the pages of some book, most usually the Holy Scriptures. In the middle ages this mode of vaticination was preceded by certain spells and ceremonials, which were supposed not merely to add to the seriousness and solemnity of the occasion, but to evoke a supernatural influence and confer a divine authority on the proceedings. The test and reply, however, were the same in all cases, consisting merely in opening the Bible, with the head averted, or with the eyes blindfolded, at any place which chance might determine, and laying the finger at hazard on any verse, which, it was believed, would reveal the fate of the person consulting the oracle. Of the same nature were the *sortes Virgilianæ*, often consulted of old with an expectation of really learning something of the occult future, as now on festive occasions for idle amusement. These *sortes* consist in opening Virgil's "*Æneid*" in the same manner, and receiving the verse on which the finger happens to rest as the prognostic of one's fate. Several singular coincidences are related, in which the information contained in the line found, and therefore predicted by the *sortes*, appears to have been confirmed by subsequent events. The most remarkable of all, however, is that of the unfortunate Charles I. of England, who, as the tale runs, many years before his disagreement with his parliament or people, while all his prospects were as bright as those of any youthful king in a peaceful age, was induced, in a moment of thoughtless gayety, amid a crowd of gay ladies and gallant courtiers, to seek his fortune in the "*Æneid*," when, to the dismay of all, he turned to the lines,

Tot populi terrique superbum
Regnatorem Asiæ! jacet ingens litore truncus,
Avulsamque humeris caput, et sine nomine corpus;

which may be rendered: "The haughty sovereign of so many Asiatic realms and races! on the seashore lies the giant trunk, the head dis severed from the shoulders, and the body without a name;" a coincidence, how casual soever, which did not fail to be considered prophetic when subsequent events had confirmed the augury by the occurrence.

BIBLIOMANIA (Gr. *βιβλίον*, book, and *μανία*, madness), a term first introduced by Dr. Dibdin to denote a rage for possessing rare and curious books. The bibliomaniac proceeds according to certain principles, but being a lover of books rather than of knowledge, attaches himself to accidental rather than essential qualities, and spends a fortune for works the contents of which he might obtain for a few dollars. The speciality which gives value to a book may be its age or rarity, the vicissitudes through which it has passed, or the fact of its having issued from a particular publishing house. It may be a handsome and peculiar binding, fanciful typography, the circumstance that it has belonged to some eminent personage, as Napoleon, Lord Byron, or Sir Walter Scott, possessing, perhaps, an autograph or marginal notes, or that the purchaser desires it to swell a collection in some particular department of literature. Bibliomania originated in Holland near the close of the 16th century, and passed thence into England, where it has held its principal seat, though it has more recently become to some extent a passion in France and in the United States of America. Numerous collections have been made of the editions of the Bible, of which the most complete is in the British museum, though rivalled by that of Mr. James Lenox of New York; of editions of the classics in *usum Delphini*, and *cum notis variorum*; of first editions of the classics (*editiones principes*), and of many books which appeared in the infancy of typography (*incunabula*); of Bipont editions, and those cited by the academy della Crusca; of the "Republics" of the Elzevirs; and works printed by Aldus, Comino of Padua, Bodoni, Mattaire, Foulis, Barbou, and Baskerville. In France the jest-books, burlesque treatises, and macaronic poems of the 16th century, which proceeded from the school of Merlin Coccaie, Folingi, and Rabelais, have been for some time much sought after by bibliomaniacs. The bindings on which the highest prices are set in France are those of Derosne, Padeloup, Simier, and Thouvenin; and in England, those of Charles Lewis and Roger Payne. The most extraordinary prices are paid for splendid old editions, copies with a likeness of the author and painted initial letters, impressions upon parchment, morocco, paper furnished with a broad margin, or upon asbestos, printed with letters of gold or silver, or having all the text set in an impression of copper. The material is more highly esteemed if tinted rose-color, blue, yellow, or green. The library of Lord Spencer, in England, contained an *Æschylus* of the

Glasgow edition of 1795, the binding of which alone cost £16 7s. sterling. The binding of Maeklin's Bible, in 4 volumes, cost 75 guineas, and that of Boydell's large edition of Shakespeare, in 9 volumes, cost £182 sterling. The London bookseller Jeffery had a volume of the "History of James II.," by Fox, bound in fox-skin, in allusion to the name of the author, and the capricious bibliomaniac Askew pushed his madness even to having a book bound in human skin, that he might possess an entirely unique volume. The edges of books have sometimes been adorned with beautiful pictures. Books formerly were often bound in copper, silver, or gold leaf, and embellished with precious stones. The shah of Persia is said to be engaged in preparing a magnificent edition of the "Arabian Nights' Entertainments," on which artists, under his personal direction, have been at work for the last 7 years. Its preparation has already cost more than \$60,000. It is not unfrequently a passion of men to obtain an extensive library in some particular department, or a complete set of the editions of some favorite author. Thus, Boulard spent a fortune in pursuit of the editions of Racine; a professor in a university is mentioned who passed his life in collecting obscene books; and Soleinnes made a library of all the dramatic pieces that have ever appeared on any stage. He searched for new pieces with painful anxiety, purchasing a mass of books in languages which he could not read. A certain Frenchman purchased at exorbitant prices all astronomical books that he could find, though he did not understand a word of that science. Bibliomaniacs are the principal purchasers in the great antiquarian book auctions which are occasionally held in London and Paris. The Mazarin Bible, supposed to have been printed in 1455, was sold in 1827 for £504. A gentleman of New York has obtained a copy of this work at an expense of \$2,500. Alcuin's MS. Bible, which was made for Charlemagne, was recently purchased by the British museum for £750. At the sale of Cardinal Lomenie's library in Paris, 8,800 livres were given for a copy of the *Grammatica Rhythmica*, in folio, printed in 1466, by Faust and Schoeffer. A copy of Virgil, printed by Sweynheim and Pannartz, in 1469, brought 4,101 livres. Dr. Dibdin mentions that 500 guineas were offered for a Livy printed by Vindelino de Spira, in 1470, "a most extraordinary copy, bound in 8 volumes, in foreign coarse vellum." One of the most memorable competitions for bibliographic treasures occurred at the sale of the duke of Roxburgh's library, in London, in 1812. A copy of the 1st edition of the "Decameron," published by Valdarf, at Venice, in 1471, was sold for the immense price of £2,260. An illuminated missal, executed for the duke of Bedford in the reign of Henry VI., was sold, in 1786, for £208; in 1815, for £637; and in 1838, for £1,100. Great interest was recently excited at Paris by the sale of an extensively illustrated copy of Voltaire's works. The edition was that of Lefèvre, 1829

-84, in 90 volumes, and its illustration had been a work of more than 20 years. The engravings amounted to the number of 12,000, and were so carefully selected that more were said to have been rejected than were inserted. This unique copy was sold for £223. At the same sale a copy of the first complete edition of Molière was sold for £18, and an "Orlando Furioso" (Venice, 1553) for £15. Among recent sales in London were a Hebrew Bible of the 18th century, written on vellum, in the uncial character, for £70; 2 MSS. of the evangelists, on vellum, of the 9th and 10th centuries, for £70 and £81; *Hieronymi Epistola*, MS., of the 15th century, on Italian vellum, illuminated, for £45 8s.; *Discordis Anasarbai Opera*, large folio, for £590; the *Aminta Favola* of Tasso, with autograph, MS., for £59; 8 MSS. of the *Divina Commedia* of Dante, of the 14th and 15th centuries, for £40, £30 10s., and £52 10s.; De Bry's "Voyages," in 9 vols., 1590-1625, for £150. John Eliot's Indian Bible sold in New York, in 1857, for \$200, and 18 numbers of Franklin's "Poor Richard's Almanack" for \$12 per number. The most expensive single work in the United States is a copy of De Bry's "Voyages." The bibliomaniac forms the subject of the 18th chapter of the *Caractères* of La Bruyère, and Dr. Dibdin has published a volume entitled "Bibliomania, or Book-Madness."

BIBRA, ERNST, baron, a German naturalist and traveller, born at his estate of Schwabheim, in Franconia, June 9, 1806. He pursued first the study of the law, and afterward, more exclusively, that of natural science, at the university of Würzburg. After having brought out, in 1849, a chemical treatise on the liver and the bile, he made a tour of exploration to Brazil and Chili, of which he published a description in 1854, under the title of "Travels in South America." To the journals of the academy of Vienna, of which he is a member, he has contributed some interesting articles on Bolivia and Chili. His most valuable works have appeared within the last few years: "Comparative Investigations of the Brains of Men and of Vertebrate Animals" (Mannheim, 1854), and "Narcotic Enjoyments and Man" (Nuremberg, 1855). His residence in the latter city contains a valuable collection of transatlantic objects of natural history and ethnography.

BIOË, or BIAZ, among painters, a blue color prepared from the *lapis armenus*, or calcareous salt of copper. It bears the best body of all bright blues used in common work, but is the palest in color.

BIOËTRE, a hospital in the immediate vicinity of Paris, on a site formerly occupied by a chateau built in the 18th century by John, bishop of Winchester. In the beginning of the 15th century the dilapidated castle was bought by the duke of Berry, the uncle of Charles VI., who erected there a magnificent new chateau, ornamented with masterpieces of art. Unhappily, it was destroyed, with all its treasures, during the civil wars. Its ruins and the

ground were given, in 1416, to the chapter of Notre Dame, and, being entirely neglected, became a resort for robbers and other offenders. Cardinal Richelieu having bought it, in 1632, founded there a military hospital, the occupants of which were removed to the Invalides in the reign of Louis XIV. Bicêtre then became an asylum for the poor, and a kind of prison where vagrants were confined. Under Louis XVI. a part of it was allotted to those suffering from venereal diseases, the patients being, by a singular rule, subjected to a severe whipping before receiving any attention from the physicians. Bicêtre was also used as a prison, and during the bloody massacres of Sept. 1792, it became the scene of the most horrible slaughter, the inmates defending themselves desperately against the revolutionary murderers. Subsequently it was used partly as a prison and partly as a hospital, but the former department having been transferred to a new building, in the rue de la Roquette, within Paris, Bicêtre is now employed exclusively as an asylum for indigent old men or invalids, and male lunatics. The principal buildings, forming a square of 900 feet on each side, are separated by 8 large courtyards. A new division, constructed in 1822, consists of 2 edifices, between which is a small garden for the use of the inmates. The establishment, from the elevation of its site, has purer air than any other hospital in Paris. The rules by which the patients are governed are as mild as good order permits, and improvements in their treatment are daily introduced. Those who are not entirely disabled by infirmities or old age are required to work 8 hours a day at their respective trades, and receive in return a share of the profits; the rest goes toward defraying the expenses of the hospital. The food is healthy and quite sufficient. The lunatics, about 900 in number, occupy a department by themselves. The gentlest treatment, except in extreme cases, is employed. To those who are capable of it, daily occupation is given on a model farm at a little distance. Others attend schools of various kinds in the establishment, and the directors constantly endeavor to find some manual or intellectual occupation for every one of them. This method has succeeded beyond all anticipation. The sociability of the lunatics has been also improved; but music, above all, has worked wonders. The majority of patients are fond of it, and some of them have become accomplished proficient, while all seem to feel its beneficial influence. Concerts are occasionally given, at which both the performers and the audience are lunatics. The establishment, with its dependencies, forms, as it were, a small town, the total population of which, patients, servants, officers, and physicians included, is not far from 5,000 souls. The neighboring village of the same name is insignificant.

BICHANA, a town of Abyssinia, in the state of Amhara, 160 miles S. S. E. of Gondar. It is a place of some importance, and the capital of

a chiefship, but the houses are mean and the wall dilapidated. It has a great weekly market.

BICHAT, MARIE FRANÇOIS XAVIER, a French anatomist and physiologist, born Nov. 11, 1771, at Thoirette-en-Bresse, department of the Ain, died at Paris, July 22, 1802, having already acquired great celebrity, though very young. He was the eldest son of Jean Baptiste Bichat, doctor of medicine of the university of Montpellier, and mayor of the small town of Poncin, where he practised medicine. Young Bichat received the rudiments of his education at Nantua. In 1788 he entered the seminary of St. Irénée, at Lyons; and as this school belonged to the Jesuits, and was under the direction of one of Bichat's uncles, a priest, he was driven from it by the revolution which broke out in 1789. His favorite studies were mathematics and physical science. On returning home he began the study of anatomy under his father, and afterward attended lectures at the hospital of Lyons. Driven a second time from Lyons by the events of the revolution, he went in 1793 to Paris, to study surgery under the celebrated Desault, at the Hôtel Dieu. Without a single acquaintance in Paris, he entered the school of Desault, and diligently followed the lectures of his master, by whom he was soon noticed for his zeal and ability. It was the practice of the school, that some chosen pupils should, each one in his turn, give an abstract of the lecture of the day, and at the close of the lecture on the following day this abstract was publicly read in the presence of the second surgeon of the hospital. On one occasion, the pupil whose turn it was to read an abstract of the lecture of the previous day, happened to be absent; Bichat stepped forward from the crowd of pupils, and offered to read his own, which had been made for private use. The offer was accepted, though the pupil was young, and had not been in the class more than a month. The abstract was clear, accurate, and full, and read with calmness and precision. On hearing of this from his colleague Manoury, Desault sent for Bichat, and from this first conversation, was so much interested in him that he invited him to reside in his own house; subsequently adopted him as his son, associated him in his labors, and destined him as his successor. Bichat continued to live with his master until the death of Desault, which happened about 2 years after their first acquaintance. After this event, Bichat arranged and published the works of his master, and opened a school for teaching anatomy, physiology, and surgery. Beside his public labors, he undertook a series of experiments on the chemical, physical, physiological, and vital properties of the different tissues of the animal economy. His labors were excessive and his constitution weak; his health gave way; lecturing fatigued him, and brought on a severe attack of bleeding of the lungs. During this first attack of illness, he passed the time in maturing his own particular views of anatomy and physiology, and sketched the plan

of the works in which these views were afterward developed. As soon as he had partially recovered from the attack, he recommenced his public labors and his private studies with the same intensity, relying on his youth and mental energy to support him in his imprudent course. Neither the entreaties of his friends nor the signs of returning disease could induce him to moderate his labor. In spite of increasing weakness, and hardly able to digest the simplest food, he continued to pass several hours a day in a damp cellar, macerating animal tissues and making various experiments to ascertain the properties of each particular kind of structure in the organs of the body. His powers at length became exhausted, but his mental energy was unabated. On one occasion he felt giddy on leaving the room where these experiments were made, and in the course of the day, while descending the stairs of the Hôtel Dieu, his foot slipped and he fell down, receiving a severe blow on the head from the fall. He was taken up insensible, and carried home; but the next day he returned to his duty, notwithstanding a severe headache. In a short time, however, he fainted from fatigue; symptoms of fever came on, which assumed a typhoid character, and proved fatal in the course of 14 days. And thus a man of genius of the highest order, from excessive love of study and continuous neglect of the physical requirements of health, fell a victim to his own imprudence, before he had attained to full maturity, for he died in the 82d year of his age. He had, however, done enough already to immortalize his name. He was the first who undertook a systematic analysis to reduce the complex structures of the body to their elementary tissues, and to ascertain the peculiar properties, chemical, physical, and vital, which characterize each simple tissue. The idea of such a work had been suggested by partial analysis before, but his *Anatomie générale* formed a new era in the development of that branch of science. The work abounds with minute and laborious research, extensive and elaborate experiment, conducted with intuitive insight and practical skill; and though a monument of fame, it was completed and published in a year. It was recognized at once, and universally, as the work of a great genius. Soon after the publication of this work, he commenced his *Anatomie descriptive*, conceived on a new plan and partly executed; but before it could be finished, Bichat died. His friends and disciples who had followed his labors and assisted in his numerous experiments, completed the unfinished volumes on the plan which he had traced himself and thoroughly explained to them; and though the work was partly written by his followers, it very properly bears his name. The works of Bichat are not standards of perfection at the present day; for the impulse which he gave to study, and the views which he developed in his analytical investigations, led to further observations and ex-

periments in the same direction, which he would have made himself, if he had lived to finish slowly that which he began so brilliantly and pushed so far, within a few short years. There was little systematic order in the study of anatomy and physiology, before his time. Dissections were made chiefly with a view to the practical art of surgery alone, and not with any comprehensive view of general analysis. He first laid stress on the general distinction between conscious and unconscious life in the body, and the correspondingly incessant action of one set of organs, sleeping or waking, contrasted with the interrupted action of another set of organs, which are active in the waking state and passive during sleep. The heart and lungs are always active night and day, while the muscles and the bones of the external frame are only active during portions of the day, and totally inactive during sleep. He divided the organism, therefore, into 2 distinct mechanisms, which he called the organic and relational, or the vegetative and the animal. These distinctions are admitted at the present day, although the vegetative or the organic mechanism is more commonly subdivided into the nutritive and the reproductive systems. Minute analysis has been carried very far in the direction which he indicated, but philosophical or systematic analysis, as he conceived it, has been almost totally neglected, or pursued without intuitive perception of its philosophical importance. He fell into some errors by generalizing too extensively, without a sufficient knowledge of minor facts, and these errors have deterred his followers from pursuing the same course. And yet the greatest work of progress remains still to be done in that direction. His *Recherches sur la vie et la mort* contains the germs of a revolution in the study of anatomy and physiology, but the defective definitions and manifest errors which it contains, have caused them to be overlooked. The same idea runs through all his works, and that is the distinction between conscious and unconscious bodily life and motion.

BICKERSTAFF, ISAAC, dramatist, born in Ireland, in 1788; the date of his death unknown. After having been one of the pages of Lord Chesterfield (viceroy of Ireland, 1745-'7), he received a commission in the marines, in which service he was lieutenant when compelled to retire with disgrace. He wrote 18 dramatic pieces, between 1756 and 1771, several of them of considerable merit and continued popularity. Those best known now are the comic operas of "Love in a Village," "Lionel and Clarissa," and "The Padlock," and the comedy of "The Hypocrite." This last is an alteration of Cibber's "Nonjuror" (itself only an adaptation of Molière's *Tartuffe*), scarcely any thing more than the character of Mawworm being written by Bickerstaff. The *Biographia Dramatica*, after relating that he fled from England, charged with a crime not to be named, says that in 1782 he was yet alive, in foreign exile, "poor and despised by all orders

of people." Before this he moved in high literary society in London, being intimate with Goldsmith, Garrick, Murphy, Boswell, Sir Joshua Reynolds, and Dr. Johnson. Mrs. Thrale relates that "when Mr. Bickerstaff's flight confirmed the report of his guilt, and Mr. Thrale said, in answer to Johnson's astonishment, that he had long been a suspected man, 'By those who look close to the ground dirt will be seen, sir,' was the lofty reply; 'I hope I see things from a greater distance.'"

BICKERSTETH, EDWARD, an English clergyman, born in Westmoreland, March 19, 1786, died Feb. 24, 1850. Educated in his native town, he was for several years a clerk in London, till in 1812 he began business as a solicitor in Norwich. His business was flourishing, when he became deeply interested in the religious and benevolent movements of which Norwich was the centre, and in 1815 he was ordained a deacon in the Anglican church. He departed the next year to Africa to inspect and organize the stations of the church missionary society in that country, and during the next 15 years he was the secretary and the chief acting officer of that society. In 1830 he resigned his office, and became rector of Walton, in Hertfordshire, where he spent the remainder of his life. He was prominent in the anniversary meetings of religious societies, and especially advocated, both by his addresses and his pen, the interests of missions. His publications are numerous, consisting chiefly of exegetical and devotional treatises, and sermons.—**HENRY, LORD LANGDALE**, brother of the preceding, an English lawyer and statesman, born in Westmoreland, June 18, 1783, died at Tunbridge Wells, April 18, 1851. He served an apprenticeship to his father, who was a surgeon and apothecary, after which he travelled on the continent as medical attendant to the earl of Oxford, whose daughter he subsequently married. He graduated at Caius college, Cambridge, in 1808, was admitted to the bar in 1811, distinguished himself by his assiduous attention to professional duties, and rose to eminence in the equity courts, to which he confined his practice. He became a bencher of the Inner Temple in 1827, in 1835 declined the offer made to him by Sir Robert Peel of a seat on the bench, and in 1836 was elevated to the peerage as Lord Langdale, and created a privy councillor. In this office he cherished his taste for literature, and was honored for his adherence to the highest principles of action.

BICKLEIGH, a parish of Devonshire, England, 8 miles S. W. of Tiverton, at the confluence of the Exe and Dart rivers. Bamfylde Moore Carew, who became "the king of the gypsies," was born here in 1698.

BIDASSOA, a small river of the Basque provinces of Spain, noted for the battles fought upon its banks, between the French under Soult and the English, Spaniards, and Portuguese, under Wellington. After the defeat of Vittoria in 1813, Soult collected his troops in a position, the right of which rested on the sea opposite

Fuenterrabia, having the Bidassoa in front, while the centre and left extended across several ridges of hills toward St. Jean de Luz. From this position he once attempted to relieve the blockaded garrison of Pampeluna, but was repulsed. San Sebastian, besieged by Wellington, was now hard pressed, and Soult resolved to raise the siege. From his position of the lower Bidassoa it was but 9 miles to Oyarzun, a village on the road to San Sebastian; and if he could reach that village the siege must be raised. Accordingly, toward the end of Aug. 1813, he concentrated 2 columns on the Bidassoa. The one on the left, under Gen. Clausel, consisting of 20,000 men and 29 guns, took a position on a ridge of hills opposite Vera (a place beyond which the upper course of the river was in the hands of the allies), while Gen. Reille with 18,000 men, and a reserve of 7,000 under Foy, took his station lower down, near the road from Bayonne to Irun. The French intrenched camp to the rear was held by D'Erlon with 2 divisions, to ward off any turning movement of the allied right. Wellington had been informed of Soult's plan, and had taken every precaution. The extreme left of his position, sheltered in front by the tidal estuary of the Bidassoa, was well intrenched, though but slightly occupied; the centre, formed by the extremely strong and rugged ridges of San Marcial, was strengthened with field-works, and held by Freyre's Spaniards, the 1st British division standing as a reserve on their left rear near the Irun road. The right wing, on the rocky descents of the Peña de Haya mountain, was held by Longa's Spaniards and the 4th Anglo-Portuguese division; Inglis's brigade of the 7th division connecting it with the light division at Vera, and with the troops detached still further to the right among the hills. Soult's plan was, that Reille should take San Marcial (which he intended forming into a bridge-head for ulterior operations), and drive the allies toward their right, into the ravines of Peña de Haya, thus clearing the high road for Foy, who was to advance along it straight on Oyarzun, while Clausel, after leaving a division to observe Vera, should pass the Bidassoa a little below that place, and drive whatever troops opposed him up the Peña de Haya, thus seconding and flanking Reille's attack. On the morning of Aug. 31, Reille's troops forded the river in several columns, carried the first ridge of San Marcial with a rush, and advanced toward the higher and commanding ridges of that group of hills. But in this difficult ground his troops, imperfectly managed, got into disorder; skirmishers and supports became mingled, and in some places crowded together in disordered groups, when the Spanish columns rushed down the hill and drove them back to the river. A second attack was at first more successful, and brought the French up to the Spanish position; but then its force was spent, and another advance of the Spaniards drove them back into the

Bidassoa in great disorder. Soult having learned in the mean time that Clausel had made good his attack, slowly conquering ground on Peña de Haya, and driving Portuguese, Spaniards, and British before him, was just forming columns out of Reille's reserves and Foy's troops for a third and final attack, when news came that D'Erlon had been attacked in his camp by strong forces. Wellington, as soon as the concentration of the French on the lower Bidassoa left no longer any doubt of the real point of attack, had ordered all troops in the hills on his extreme right to attack whatever was before them. This attack, though repulsed, was very serious, and might possibly be renewed. At the same time, a portion of the British light division was drawn up on the left bank of the Bidassoa so as to flank Clausel's advance. Soult now gave up the intended attack, and drew Reille's troops back across the Bidassoa. Those of Clausel were not extricated till late in the night, and after a severe struggle to force the bridge at Vera, the fords having become impassable by a heavy fall of rain on the same day, the allies took San Sebastian, except the citadel, by storm, and this latter post surrendered on Sept. 9.—The second battle of the Bidassoa took place Oct. 7, when Wellington forced the passage of that river. Soult's position was about the same as before; Foy held the intrenched camp of St. Jean de Luz, D'Erlon held Urdax and the camp of Ainhoa, Clausel was posted on a ridge connecting Urdax with the lower Bidassoa, and Reille stood along that river from Clausel's right down to the sea. The whole front was intrenched, and the French were still employed in strengthening their works. The British right stood opposed to Foy and D'Erlon; the centre, composed of Giron's Spaniards and the light division, with Longa's Spaniards and the 4th division in reserve, in all 20,000 men, faced Clausel; while on the lower Bidassoa Freyre's Spaniards, the 1st and 5th Anglo-Portuguese divisions, and the unattached brigade of Aylmer and Wilson, in all 24,000 men, were ready to attack Reille. Wellington prepared every thing for a surprise. His troops were drawn up well sheltered from the view of the enemy during the night before Oct. 7, and the tents of his camp were not struck. Beside, he had been informed by smugglers of the locality of 3 fords in the tidal estuary of the Bidassoa, all passable at low water, and unknown to the French, who considered themselves perfectly safe on that side. On the morning of the 7th, while the French reserves were encamped far to the rear, and of the one division placed in 1st line many men were told off to work at the redoubts, the 5th British division and Aylmer's brigade forded the tidal estuary, and marched toward the intrenched camp called the Sansculottes. As soon as they had passed to the other side, the guns from San Marcial opened, and 5 more columns advanced to ford the river. They had formed on the right bank before the French could offer

any resistance; in fact, the surprise completely succeeded; the French battalions, as they arrived singly and irregularly, were defeated, and the whole line, including the key of the position, the hill of Croix des Bouquets, was taken before any reserves could arrive. The camp of Biriatu and Bildox, connecting Reille with Clausel, was turned by Freyre's taking the Mandale hill, and abandoned. Reille's troops retreated in disorder until they were stopped at Urogne by Soult, who arrived in haste with the reserves from Espelette. While still there, he was informed of an attack on Urdax; but he was not a moment in doubt about the real point of attack, and marched on the lower Bidassoa, where he arrived too late to restore the battle. The British centre, in the mean time, had attacked Clausel, and gradually forced his positions by both front and flank attacks. Toward evening he was confined to the highest point of the ridge, the Grande Rhune, and that hill he abandoned next day. The loss of the French was about 1,400, that of the allies about 1,600 killed and wounded. The surprise was so well managed that the real defence of the French positions had to be made by 10,000 men only, who, on being vigorously attacked by 33,000 allies, were driven from them before any reserves could come to their support.

BIDDEFORD, a thriving manufacturing and commercial city in York co., Me., on the Saco river, at the falls, 6 miles from its mouth. On the opposite bank is the town of Saco, engaged in similar occupations, and connected with it by a bridge 500 feet long. The water-power is excellent and inexhaustible, the fall being 42 feet. In 1855, 10 cotton mills were worked by it—5 on each side of the river—containing in all about 60,000 spindles and 3,000 looms. Beside these cotton mills, chiefly owned by foreign capitalists, there are extensive manufacturing of woollen goods, hardware, &c. In one iron foundry 1,000 tons of pig iron are consumed annually. About 5,000,000 feet of lumber are annually sawed out here into boards, planks, laths, shingles, &c. It is also a considerable lumber market from mills further up the river. Owing to the narrowness and crookedness of the river, and its swift currents below the falls, navigation is not very extensively carried on. In 1854, 2,532 tons of shipping were registered, and 2,462 licensed. There are 4 banks, and insurance, gas, and savings bank companies; 3 libraries, with an aggregate of 7,000 vols.; 2 newspapers, and an academy. The schools are very good, and \$6,000 are annually expended upon them. Much attention is paid to agriculture, and there are large fruit nurseries. The Portland, Saco, and Portsmouth railroad, passing through the town, connects it with Portland and Boston. The "Pool," near the mouth of the river, is a place of summer resort. A fine beach several miles in extent is there found. Biddeford was incorporated as a city in 1854. Its population in 1840 was 2,574; 1850, 6,095; 1857, about 12,000.

BIDDLE, CLEMENT, a colonel in the revolutionary army, born in Philadelphia, May 10, 1740, died there July 14, 1814. Descended from one of the early Quaker settlers and proprietaries of western New Jersey, he retained his connection with the society of Friends until the commencement of the war of independence. In early life he engaged in commercial pursuits in his native city; but notwithstanding this and the discipline of the religious society in whose tenets he had been educated, he united in 1764 with a number of Quaker friends in forming a military corps for the protection of a party of friendly Indians who had sought refuge in Philadelphia from the fury of a band of lawless zealots known as the Paxton boys, who had recently massacred some unoffending Conestoga Indians at the interior town of Lancaster. These banditti, powerful in numbers, had advanced within 5 or 6 miles of the city, threatening destruction to all who should oppose them, when the vigor of the military preparations checked their further progress. Scarcely had this local disturbance been quieted when news was received of the resolution of the British house of commons to charge certain stamp duties in the colonies. The feeling engendered throughout the whole country by this step was nowhere deeper than in Philadelphia; and the consummation of the resolve of the commons by the subsequent passage of the stamp act, induced, in that city, the celebrated non-importation resolutions of Oct. 25, 1765, one of the most decided measures adopted during the early part of the struggle with Great Britain, for the preservation of the civil rights of the colonists. To this agreement the names of the principal merchants of the city were attached, and among the number those of Col. Biddle and his brother Owen Biddle. The course subsequently pursued by the British ministry destroying all hope of a reasonable adjustment of the differences, Col. Biddle embarked early and zealously in the defence of the liberties of America, and by his active exertions was greatly instrumental in forming the "Quaker" company of volunteers raised in Philadelphia in 1775, of which he was elected an officer before the corps joined the army. Congress having, in June, 1776, for the protection of the middle colonies, directed the immediate establishment of a flying camp of 10,000 men to be furnished by Pennsylvania, Maryland, and Delaware, on July 8 following elected Col. Biddle its deputy quartermaster-general, as well as for the militia of Pennsylvania and New Jersey, ordered to rendezvous at Trenton. Col. Biddle took part in the important battle of Trenton at the close of the same year, and, in conjunction with another officer, was ordered by Washington to receive the swords of the Hessian officers. In the stoutly contested victory of Princeton, the surprise and retreat at Brandywine, the well-concerted but unsuccessful enterprise of Germantown, he was also engaged; and during the winter of

1777-'78, shared the sufferings of the American army at the memorable cantonment of Valley Forge. As commissary-general of forage, under Gen. Greene, he rendered important service to the army in several critical junctures, especially during the famine at Valley Forge. At Monmouth he shared the success of his countrymen. From the time of his entering the service he was actively and usefully engaged until Sept. 1780, when, unable longer to yield to the friendly solicitations of Washington and Greene, owing to the pressure of his private affairs, he was compelled to return to private life. His military career, however, was briefly renewed in the capacity of quartermaster-general of Pennsylvania (an appointment received by him from his native state in Sept. 1781), in the expedition under Washington, in 1794, against the whiskey insurgents of that state. Col. Biddle labored earnestly also in the early political movements of the patriot party of his state, advocating effectively the revolutionary state constitution of 1776 (which his brother Owen Biddle had had, as a member of the convention, a share in framing), as a measure calculated to promote the best interests of Pennsylvania. The triumph of the constitutional party, after encountering protracted and bitter opposition in the city of Philadelphia, is known. A declaration or bill of rights as a constituent part of the organic instrument of federal union, to prevent abuse or misconstruction of its powers, not only met with his approval but enlisted his active support. After the organization of the federal government under the constitution of 1787, Col. Biddle was appointed marshal of Pennsylvania, as an evidence of the regard in which he was held by Washington. This regard, which he had early acquired, was maintained and even increased by frequent intercourse and constant epistolary correspondence, as the letters of Washington written to him until within a few weeks of the general's death abundantly show. Greene and Knox were also his warm personal friends and correspondents, and when the former was selected for the command of the army in the southern states, he tendered to and urged upon Col. Biddle the post of quartermaster-general. As a private citizen he merited and enjoyed during his life the confidence and respect of the community in which he lived.

BIDDLE, CLEMENT CORNELL, LL. D., 5th son of the preceding, born at Philadelphia, Oct. 24, 1784, died Aug. 21, 1855. At the commencement of the present century he entered the naval service of the United States, in which he remained for a brief period, and afterward applied himself to the study of the law. Shortly after his admission to the bar his patriotic feelings were roused by the outrage upon the U. S. ship *Chesapeake* in the month of June, 1807, and in the expectation of a war he applied to Jefferson for service in the army. He received an appointment

as captain of dragoons, and was stationed with his regiment for some time at New Orleans. But the British government having, after a tedious negotiation, disavowed the act of the commander of the Leopard, and peaceful relations between the countries being restored, he resigned his commission. However, subsequent aggressions by the British, both by their doctrine and system of blockade and their orders in council, at length led to the declaration of war, June 18, 1812. Scarcely had the proclamation been made when Capt. Biddle raised in his native city a company of volunteers, called the "State Fencibles," and was elected to the command of it in July, 1812. Upon the organization of the 1st regiment of Pennsylvania volunteer infantry, which was mustered into the U.S. service, he was elected its colonel and served as such during the war. The retreat of the British from Baltimore left no opportunity for active service to his command, which during the autumn of 1814 had, with other regiments, been stationed at Camp Dupont in the state of Delaware. On his retirement from military life, at the conclusion of the war, he devoted his leisure to the investigation and study of philosophical subjects in the broad domain of ethics and metaphysics, and also to the principles governing the production, distribution, and consumption of wealth. To the science of political economy especially did he address himself, and his writings have in a great measure been instrumental in popularizing its study. The many editions of the translation of Say's "Treatise on Political Economy," with the notes and additions of Mr. Biddle, alone afford ample evidence of the fact. In the free trade convention, in Philadelphia, in Sept. 1831, he bore a prominent part; and, although occupying no public position, also contributed to mould the policy of the federal government with regard to the currency, as well as to its commercial intercourse with foreign nations.

BIDDLE, JOHN, "the father of English Unitarians," born at Wotton-under-Edge, in Gloucestershire, in 1615, where his father was a woollen draper, died Sept. 22, 1662. He graduated at Oxford, and was elected master of the free school of Gloucester. In the mean time he had been studying theology with great ardor, and printed for private circulation a small tract entitled, "Twelve Arguments drawn out of the Scripture, wherein the commonly received opinion touching the Deity of the Holy Spirit is clearly and fully refuted." In his conversation he was equally outspoken, and the cry of heresy was raised against him. He was dismissed from his situation, and thrown into the county jail, Dec. 2, 1645. To the magistrates he delivered a confession of faith, from which it is evident that his mind was then in a state of doubt between Trinitarianism and Unitarianism. Six months afterward, Archbishop Usher had a conference with him, but in vain. The long parliament summoned him to Westminster, and appointed a committee to sit upon his case. Being arraigned on the charge of heretical opin-

ions concerning the Holy Spirit, he refused to answer all such questions as were designed to entrap him into a confession of faith concerning the nature of Jesus Christ. He was kept in suspense for 18 months, when a letter addressed by him to Sir Harry Vane had the desired effect of bringing about a decision. He was committed to the custody of one of the officers of the house of commons, and remained in confinement for 5 years. The assembly of divines at Westminster examined him, the result of which was to strengthen him in his opinions. He now published his tract, hitherto privately circulated. It created much scandal, and was ordered to be burnt by the common hangman, which only increased its sale. While yet in prison, he printed a "Confession of Faith concerning the Holy Trinity according to the Scriptures, with the Testimonies of several of the Fathers on this head" (London, 1648). This was followed by "The Testimonies of Irenæus, Justin Martyr, Novatianus, Theophilus (who lived the 2 first centuries after Christ was born, or thereabouts), as also Arnobius, Lactantius, Eusebius, and Hilary, concerning that one God and the persons of Holy Trinity." The Presbyterians, then dominant in church and state, passed a measure through parliament, by which every one who denied the doctrine of the Trinity should be punished with death. This was aimed at Biddle, and he was about to suffer, when a sudden opposition arose to it among the Independents and the army. The ordinance was therefore suffered to lie in abeyance. When the Independents gained the upper hand (1649), the penal laws against heretics were mitigated or repealed. Biddle was released, and retired into Staffordshire, where he was warmly welcomed by a magistrate, who procured him a congregation, made him a private chaplain, and left him a legacy. Bradshaw, president of the council, however, remanded him to prison. He had now lost not only his fortune and his liberty, but his friends. Dr. Gunning, afterward bishop of Ely, was the only theologian who visited him in prison. He suffered great privations, but his accurate knowledge of the Greek Scriptures, which he knew by heart, induced Roger Daniel, a London printer, to give him for correction the proof-sheets of a Greek Septuagint, and this relieved his wants. In 1651, an act of indemnity and oblivion for all heretical offences was passed by parliament, and Biddle was again released, and collected around him those whom his writings had brought to his way of thinking. Their fundamental law was that "the unity of God is a unity of person as well as nature." The members of this new sect were called Bidelians, and, when their harmony with the doctrines of Socinus was perceived, Socinians. A translation of Biddle's "Twofold Scripture Catechisms" for the use of foreigners, again got him into trouble. He was summoned to the bar of the house of commons, and on his refusal to criminate himself, was committed for contempt, and the death-penalty

ordinance was revived against him. When Cromwell dissolved the parliament, Biddle was again set free after a 10 months' term. A whole Baptist congregation became converted to Biddle's views, and this was so displeasing to the Baptist minister, Mr. Griffin, that he challenged Biddle to a public controversy. Biddle imprudently accepted the challenge, and spoke in a derogatory manner of Christ's divine nature. He was thrown into the Poultry Compter, July 8, 1655, and thence removed to Newgate, and tried for his life on the long parliament ordinance against blasphemy and heresy. As the trial was evidently going against him, Cromwell interposed, the trial was stopped, and Biddle was remanded to jail. In order to shelter Biddle yet more securely from his persecutors, Cromwell banished him to Star castle, in St. Mary's, one of the Scilly islands, with an annual subsistence of 100 crowns (Oct. 1655). Here he continued to devote himself to the study of theology. After 3 years, he was released on a writ of *habeas corpus*, and returning to London, became pastor of an Independent congregation, but fearing the Presbyterians, who came again into power after the death of Cromwell, he retired into the country. Upon the final dissolution of the rump parliament, he came to London again and renewed his ministrations. The restoration of Charles II. in the summer of 1660, again caused him to retire from publicity. His caution did not preserve him long. His little congregation was surprised June 1, 1662, when holding a convective in the house of a London citizen. Biddle was fined £100, and each of the audience £20, with confinement in default of payment. The prison was kept in such a manner that 5 weeks' residence in it was enough to cause his death. In 1658 he published several small pieces, translated from the works of the Polish Unitarians, among which was Przypocovius's "Life of Faustus Socinus," also, "Notes on the Revelations." He was admitted, by foes as well as friends, to be irreproachable, except for his opinions. He denied the doctrine of original sin and the atonement. Joshua Toulmin, a modern English Unitarian minister, has written a "Review of the Life, Character, and Writings of John Biddle," in the spirit of an admirer.

BIDDLE, NICHOLAS, a distinguished naval commander of the revolution, born in Philadelphia, Sept. 10, 1750, was killed at sea in the 28th year of his age by an explosion of the magazine of his vessel, March 7, 1778. In 1765, while on a voyage to the West Indies, he with 2 others, chosen by lot, were left for 3 months on an uninhabited island, he being at that time but 15 years of age. In 1770 he entered the British navy. When Phipps, afterward Lord Mulgrave, was about to start on his exploring expedition, young Biddle, though a midshipman, deserted his own vessel and shipped as a seaman on the *Carcass*, serving through the cruise with Lord Nelson, who was a mate of Phipps's vessel. On the commencement of the

American revolution he came to America and was made captain of the *Andrew Doria*, a brig of 14 guns and 180 men, in which he participated in Commodore Hopkins's attack on New Providence. After refitting in New London he was ordered on a cruise to the banks of Newfoundland, and in 1776 was fortunate enough to take among other prizes 2 transport ships with valuable cargoes and with a battalion of Highland troops. He was appointed to the command of the *Randolph*, a 32 gun frigate, in Feb. 1777. In March, 1778, he was wounded in an action with the *Yarmouth*, an English 64 gun ship. While under the hands of a surgeon, the magazine blew up, and the whole crew of the *Randolph* were lost, except 4 men, who were tossed about on a piece of the wreck for 4 days before they were relieved. The other vessels of the squadron escaped in consequence of the disabled state of the *Yarmouth*.

BIDDLE, NICHOLAS, an American financier, born at Philadelphia, Jan. 8, 1786, died Feb. 27, 1844. His father, Charles Biddle, was a patriot of the revolution, and vice-president of Pennsylvania, when Benjamin Franklin was the president, under the former constitution of that state; the son was named after his uncle Commodore Nicholas Biddle, the subject of the preceding article. Graduating with the highest honors at Princeton college in 1801, Biddle then pursued the usual course of study for the bar, but being too young for admission to it, he went to Europe as secretary to Gen. Armstrong, U. S. minister to France, and afterward held the same position with Mr. Monroe, U. S. minister to England. He traveled extensively in Europe, and to his attainments in classical learning added a very thorough knowledge of the modern languages; indeed, his devotion to liberal studies was constant through life. In 1807 he returned to Philadelphia, and commenced the practice of the law. He also edited the "Port Folio," for a time in conjunction with Joseph Dennie, compiled a "Commercial Digest," and prepared the narrative of "Lewis and Clark's Explorations." He was in the house of representatives of Pennsylvania in 1810, and was distinguished by his efforts to establish a general system of education. During the war of 1812-'15, he was in the state senate, and ardently supported the measures for carrying on the contest; in 1814 he wrote the report of the senate committee upon the propositions from the Hartford convention,—an able and patriotic state paper, that attracted great attention. In 1817 he was the candidate of the democratic party for congress, but was defeated by the federalists. In 1819, President Monroe appointed him a government director of the U. S. Bank. In 1823, on the resignation of Mr. Langdon Cheves, he was elected president of that institution, and administered its affairs with consummate ability. During the presidency of Gen. Jackson, the recharter of the bank became the leading political question of the day. The controversy was one of great violence; a

bill for the recharter was passed by congress, but vetoed by the president. By the limitation of its charter, the bank terminated its existence in 1886, retaining to the last its stability and character. The success of the national bank induced the legislature of Pennsylvania to create "a state bank to be called the United States Bank." Nicholas Biddle, then at the height of his reputation as a financier, was urgently solicited to accept the presidency of the new institution. He consented—with reluctance, it is stated—and continued at its head till March, 1839, when, his health being much impaired, he resigned, leaving the bank, apparently, in a prosperous condition. Two years afterward, the bank finally ceased payment, and was declared to be insolvent. Whether this was the result of measures pursued during the administration of Mr. Biddle, or after it, or of general causes affecting the financial condition of the whole country, or of difficulties inherent to the working of the state institution, were points of vehement controversy, which our limits do not permit us to review. Mr. Biddle published a series of letters in vindication of his administration of the state bank. There is an extended biography of him, by a distinguished citizen of Pennsylvania, in the "National Portrait Gallery" (edition of 1854). From political opponents on the bank question, his character has also won some high eulogiums. The Hon. W. F. Packer (now governor of Pennsylvania), in advocating a railroad connection of Philadelphia with the lakes, said: "This was the favorite project of the late Nicholas Biddle; and whatever may be said of him as a politician or a financier, all agree that on questions of internal improvement and commerce he was one of the most sagacious and far-seeing statesmen of this union." The Hon. C. J. Ingersoll, in his history, says: "Nicholas Biddle was as iron-nerved a man as his great antagonist Andrew Jackson, loved his country not less, and money as little." He was an earnest promoter of many great public improvements, and a member of numerous associations for beneficial purposes, in which he exercised, by his popular manners and force of character, a commanding influence. As president of the trustees of the Girard college, he determined the plan of the building in accordance with his own classic taste, to which Philadelphia owes, also, the beautiful structure the U. S. custom house, formerly the U. S. bank. His speeches, essays, and letters, exhibit an unusual combination of elegance with vigor of style. In 1811 he married Miss Craig, of Philadelphia, who had inherited an extensive country seat called "Andalusia," on the river Delaware. There Mr. Biddle indulged his predilection for agriculture, which, with literature, formed the relaxation of his laborious life. He was for many years the president of the agricultural and the horticultural societies of Pennsylvania, and delivered before them several addresses.

BIDDLE, RICHARD, brother of the preceding,

and, like him, an accomplished scholar, born in Philadelphia, March 25, 1796, died at Pittsburg, Penn., July 6, 1847. He shared the military ardor of his family, which has furnished several gallant officers to the army and to the navy, and though a mere youth in 1813, he was in arms at Shillpot, and in the following year at Camp Dupont, in the force raised to protect Philadelphia from the expected advance of the British army. He studied the law, and then removing to Pittsburg, he soon became an acknowledged leader of the bar. In 1827 he visited England; a book of travels in America, by Capt. Basil Hall, appearing about that time, an exposure of its errors was made by Mr. Biddle, in a publication that exhibited his remarkable vigor of mind and accuracy in details. These qualities were more highly tasked in his "Life of Sebastian Cabot," which brought to light, from recondite sources, new and important information upon the history of maritime discoveries in America. Some of the original opinions maintained in this work have been contested by subsequent writers, but the great ability displayed in it has never been denied. With these investigations he occupied his time for about 3 years in Europe, and on his return home resumed the practice of the law. In 1837 he was elected to Congress, from which he retired in 1840. His course in that body was marked by a determined resistance to extremes of opinion or policy, from either section of the Union.

BIDDOOMAH, or BUDDUMA, a piratical tribe who inhabit the islands of Lake Tchad, the recently explored inland sea of central Africa. They neither sow, plant, nor rear cattle, but maintain themselves by fishing and plunder. They own nearly 1,000 barks, and have made themselves complete masters of the lake and its borders. Some of these men, whom Major Denham saw at Bornoo, struck him as the wildest and ugliest specimens of humanity he had ever seen. They are pagans, and have maintained their independence of the Mohammedans living around them, and with whom they are constantly at war. They were visited by Dr. Overweg in 1851 and '52. Dr. Barth, who visited them after Overweg's death, informs us that they call themselves Yedina, and that Biddoomah is the title given to them by their neighbors. They are jet black. Their largest boats are 40 feet in length and 6½ in width. These boats are called *makara*, made of light wood. They are without sails and propelled by long poles. The ribs of the boat are fastened together with ropes, the holes being stopped with bast. Dr. Barth says they belong to the Koto-ko, and are nearly related to the people of Nghala. Their language was originally distinct from the Kanuri, although in process of time they have adopted many of their terms.

BIDLOO, GODFREY, a Dutch surgeon and anatomist, born at Amsterdam, March 12, 1649, died at Leyden in April, 1718. His parents were Anabaptists, and in compliance with

their wishes he devoted himself to the study of anatomy. In 1688 he was appointed professor of anatomy at the Hague. In 1694 he became professor of anatomy and surgery at Leyden, and about the same time physician to William III. of England; on the death of whom, in 1702, Bidloo returned to his professorship at Leyden. He published *Anatomia Humani Corporis*, folio, Amst., 1685, comprised in 105 finely drawn plates. This work was incorrect in many respects, but it was, notwithstanding, one of the best of the kind then existing. Oowper, a surgeon of London, is said to have appropriated the plates, and having altered them and made some slight additions, published them as his own.

BIDPAY, or PIRPAR, an Indian Bramin and gymnosophist, who is supposed by some to have lived 2,000 years and by others 800 years before the Christian era, and of whose life nothing is known except that he was governor of a part of Hindostan. His name is attached to a collection of ingenious fables which have been spread throughout the East and the West, and are regarded as a summary of all practical wisdom. They were originally written in Sanscrit, under the titles of *Pancha Tantra* and *Hitopadesa*, and after having been translated into Arabic and Hebrew, a Latin version of them was made in 1262 by Giovanni da Capua, under the title of *Directorium vite, parabola antiquorum sapientium*. The *Hitopadesa* was edited by Schlegel, and published at Bonn in 1829; the Arabic text was published at Paris, by Sylvestre de Sacy, in 1816; and the fables have been translated into almost all languages. Eighteen of the fables of La Fontaine are copies or close imitations of them. Recent savants are of opinion that the author of the fables of Bidpay was a Bramin named Vichnu Parma.

BIEDERMANN, FRIEDRICH KARL, a professor of philosophy and public law at the university of Leipsic, born in that city, Sept. 25, 1812. In 1845, his lectures at the university were suspended on account of his liberal sentiments; subsequently he was reinstated in his position. Since 1850 he has been engaged upon a publication of a new encyclopaedical work, to be called *Germania*. His "Lectures on Socialism," and a work on German philosophy, from Kant to our day, are worthy of mention.

BIELA, WILHELM VON, baron, born at Roela, Prussia, March 19, 1782, died at Venice, Feb. 18, 1856, an Austrian officer, who has rendered his name immortal by discovering an interesting comet, Feb. 27, 1826, while stationed at Josephstadt, in Bohemia.

BIELEFELD, a circle of Prussia, in the province of Westphalia; pop. 47,739. The Teutoburger Wald range of mountains runs through the circle. It produces fine flax and hemp, but little timber and grain. Linen yarn, ironware, tobacco, woollens, leather, soap, copper and copper ware, yarns, and damask cloth, are among the manufactures.—The capital of the circle is of the same name; pop. 10,308. It has

an old fortress, now used as a prison; it is surrounded by ramparts and a broad ditch which have been laid out in beautiful walks. The Cologne and Minden railway passes through the town.

BIELEV, or BIELEF, a town of Russia, in the government of Toola, situated on the river Oka, 64 miles S. W. of the town of Toola; pop. 7,000. It has a considerable trade, and manufactures of soap, leather, and hardware.

BIELGOROD, a town of Russia, in the government of Koorak, and 73 miles S. of the town of Koorak, on the river Donets; pop. 10,818. It contains 13 churches, and 8 monasteries.

BIELITZ, a duchy of Austrian Silesia, between the Vistula and the Biala. It was a minor sovereignty until it came into the possession of the princes of Sulkoffsky in the year 1752, when Francis I., emperor of Germany, erected it into a dukedom. One-half of its 12,000 inhabitants are Protestants and the other half Catholics.—The capital of the duchy of the same name, pop. 5,500, has an old castle, a fine park, 8 churches, 2 Catholic and 1 Lutheran; is the seat of the superintendent of the Protestants of Moravia. It has considerable woollen, cassimere, and linen manufactures.

BIELLA, a province of Piedmont, which makes part of the intendency of Turin; pop. 94,528. It is traversed by a branch of the Apennines. The principal products are cattle, iron, copper, corn, rice, hemp, and silk-worms. The fields are irrigated by canals.—The chief town of the province, also named Biella, is a bishop's see, and has a royal college, a cloth factory, and trades in silk, oil, and chestnuts; pop. 8,250.

BIELO-OZERO, a lake of Russia, in the government of Novgorod, in lat. 60° 10' N., long. 87° 30' E. Length, 25 miles; breadth, 20 miles. The Sheksna, a branch of the Volga, forms its outlet, and canals connect it with the Onega, Sookhona, and Dwina.

BIELSKI, MABON, a Polish historian, born in 1495, died in 1575, at Biala, in the district of Sieradz. His *Kronika swiata* and *Kronika Polska* (Cracow, 1550 and 1564), contain the first comprehensive attempt at a history of Poland. He wrote 2 satirical poems, *San majowy* (Cracow, 1590), and *Seym niewiاعي* (1595), picturing, in the one, the degradation of Hungary, and calling upon his countrymen to exhibit a nobler spirit than the Hungarians, while the other gives a keen analysis of the condition of Poland in his days. A strategetical work of his, *Sprawa rycerska* (1569), gives valuable information upon the condition of the Polish army, and the character of Polish tactics. After serving in the army, and taking part, in 1581, in the battle of Obertyn, he devoted himself, for the rest of his days, to literary pursuits. In 1617 the bishop of Cracow stopped the circulation of his "Chronicles," as they were suspected to contain heterodox sentiments.

BIENNE, or BIEL, a lake and town of Switzerland, in the canton of Bern. The lake, which lies 8 miles N. E. of that of Neuf-

châtel, is 10 miles in length, and from 1 to 8 in breadth. It is an expansion of the river Thiele, and chiefly interesting from its containing the island of St. Pierre, where Rousseau resided in 1765. The town, situated at the north end of the lake, 17 miles N. W. of the town of Bern, is surrounded by old walls, has a high school, and several mills. Watchmaking is extensively carried on. Pop. 4,248, chiefly Protestants.

BIENNIALS, a technical term in botany, applied to plants which attain their full period of growth, reproduce their seed, and die within 2 years. Parsley, foxglove, and many other herbaceous plants, come under this denomination, as they attain their growth during the first year, flower and run to seed the second, and then die. In botanical works, biennial plants are designated by the astronomical sign of the planet Mars ($\text{\textcircled{♂}}$), which performs its revolution around the sun in 2 years.

BIENVILLE, a parish in the N. W. part of Louisiana, bounded on the W. by Lake Bistincan, which communicates with Red river by an outlet, and is navigable by steamboats. The parish was set off from Claiborne parish in 1846. Its surface is thickly wooded, covered with occasional plantations of cotton and maize. It is traversed by Black Lake and Saline bayous. In 1855 the productions were 6,659 bales of cotton, and 221,225 bushels of Indian corn; the value of real estate was \$830,770; and the pop. 8,168, of whom 8,699 were slaves. Capital, Sparta.

BIERNAOKI, ALOYS PROSPER, a Polish agricultural reformer, born in 1778, in the palatinate of Kalish, of one of the most ancient noble families of Poland, died at Paris in 1856. He finished his studies at the university of Frankfurt-on-the-Oder, where he developed a taste for ceaseless intellectual activity, in respect of which he was prominent among his compatriots during a long and agitated life. After leaving the university he travelled in Germany, perfecting his knowledge of scientific agriculture, which at that time lay in the most forlorn and desolate state in Poland, an essentially agricultural country. Biernacki devoted his abilities, energy, and fortune to the difficult task of enlightening his countrymen, and making them familiar with new inventions and methods. He had not only to contend against the routine of prejudices, but to meet the equal ignorance of nobles and peasants. He established on his estates a school of mutual instruction on the Lancasterian method. He improved the breed of sheep by introducing in Poland merinos, which now equal, if they do not surpass, those of Spain. To Biernacki's indefatigable exertions Poland is greatly indebted for having improved and developed the resources of her soil. His estate, Sulislawice, near Kalish, was the earliest model-farm in Poland, established at his own cost, long before any other nobleman or the government had thought of such an institution. Having embraced constitutional ideas in politics, after the model of the

celebrated French constitutional opposition to the older Bourbons, Biernacki was for 10 years one of the leaders of a similar opposition in Poland. At the revolution of 1830 he was a member of the Polish diet, and zealous for employing decided and energetic measures. During the war he was secretary of finance. After the suppression of the revolution he emigrated to Paris, where he lived in studious occupation till his death.—JOZEF, a soldier, and elder brother of the foregoing, also of high mental accomplishments, a fervent and devoted patriot, fought in Italy under Moreau, Scherer, and Macdonald, against the Austrians and Russians; and after participating in the Polish revolution of 1830, and in the partial movements which followed it, he died in 1836, a state prisoner in one of the Russian fortresses.

BIERVLIET, a town of Holland, in the province of Zealand, 18 miles E. N. E. of Sluis. It is the birthplace of William Beukels, who invented the process of curing herrings, and contains a monument to his memory, erected by Charles V.

BIG BLACK RIVER, a river about 200 miles in length, having its sources in Choctaw co., Miss., and taking a south-westerly direction, enters the Mississippi through 2 mouths, one of which is in Warren county, and the other in Claiborne, at Grand Gulf. It is bordered throughout most of its course by rich cotton plantations.

BIG BONE LICK, a salt spring in Boone co., Ky., especially interesting to geologists, and naturalists, on account of the deposits of fossil bones of the mastodon, and several species of mammalia found in the soil. The soil containing the deposit is dark colored and marshy, generally overlaid with gravel, and resting on blue clay.

BIG HORN RIVER, a river of Nebraska, rising in that spur of the Rocky mountains known as the Black hills, which, in a semicircular curve to the N. E., intersects the entire territory, striking the Missouri at the mouth of the Yellowstone. The Big Horn river pursues a nearly northerly direction. It meets with the Wind river from the Wind river mountains on the W., about in the centre of the territory, whence pursuing still a northerly direction, with a slight curvature to the W., it enters the Yellowstone at Mannel's fort.

BIG SPRING, a post village of Breckenridge county, Kentucky, S. W. of Louisville. The place receives its name from a large spring which rises near the centre of the village, and the waters of which, after flowing a few hundred feet, suddenly disappear into the ground.

BIGAMY, the marrying of a second wife or husband during the life of the first. This is an offence in all Christian countries. Exceptions are, however, created where the first marriage is void, or has been dissolved by competent authority. By the laws of New York, the offence involves imprisonment not exceeding 5 years. The exceptions are, absence of the first

husband or wife for 5 years, without the residence being known to the party marrying a second time; or deliberate absence from the United States for a like period; or divorce, except for cause of adultery in the party marrying a second time.

BIGELOW, JACOB, M. D., LL. D., an American physician and writer, born in Sudbury, Mass., in 1787; graduated at Harvard university in 1806, and commenced practice in Boston in 1810. A skilful botanist, he published, in 1814, the *Florula Bostoniensis*, and afterward an enlarged edition of the same work; he also published his "American Medical Botany," in 3 vols., 8vo, with plates. He had at that time an extensive correspondence with European botanists, and different plants were named for him by Sir J. E. Smith, in the supplement to "Rees' Cyclopædia," by Schrader in Germany, and De Candolle in France. For more than 40 years he has been an active and distinguished practitioner of medicine in Boston; during half of this time he was a physician of the Massachusetts general hospital, and held the offices of professor of materia medica and of clinical medicine in Harvard university. He also for 10 years delivered lectures on the application of science to the useful arts, at Cambridge, as Rumford professor; these were afterward published under the title of "Elements of Technology." He was one of the committee of 5, selected in 1830, to form the "American Pharmacopœia;" and the nomenclature of the materia medica afterward adopted by the British colleges, which substituted a single for a double word when practicable, is due in principle to him. He has published numerous medical essays and discourses, some of which are embodied in a volume entitled "Nature in Disease," published in 1854; one of these essays, "A Discourse on Self-Limited Diseases," delivered before the Massachusetts medical society in 1835, had unquestionably a great influence in modifying the practice of physicians at that time and since. He was the founder of Mt. Auburn cemetery, near Boston, the first establishment of the kind in the United States, and the model of those which have followed; he has found time to indulge his artistic tastes in its various decorations, and the much admired stone tower, chapel, gate, and fence, are all made after his designs. He has the reputation of an accomplished classical scholar, and has been an occasional contributor to the literary periodicals and reviews; he is an excellent humorous writer both in prose and verse, and a volume of poems, entitled "Eolopœsia," has been attributed to him. He was for many years the president of the Massachusetts medical society, and of the American academy of arts and sciences, which last office he now holds. In commemoration of his services, the trustees of the hospital, in 1856, ordered his marble bust to be placed in the hall of that institution.

BIGELOW, JOHN, editor of the "New York Evening Post," was born at Malden, in Ulster county, N. Y., Nov. 25, 1817, graduated at

Union college, 1835, studied law with the late Robert Sedgwick, and was admitted to the bar of New York city in 1839. He practised law with success about 10 years, varying the routine of professional duties with various literary labors. In 1840 he was occupied as literary editor of the "Plebeian," and in 1843, 1844, and 1845, was a frequent contributor to the "Democratic Review," edited by John L. O'Sullivan, subsequently minister to Portugal. The articles by Mr. Bigelow in the "Review" which attracted most attention were those on "Constitutional Reform," "Executive Patronage," "The Reciprocal Influences of Civil Liberty and the Physical Sciences," "Lucian and his Age," and "Pascal." He also edited Gregg's "Commerce of the Prairies," and other popular books of travel. In 1845, Mr. Bigelow was appointed by Gov. Wright one of the inspectors of the state prison at Sing Sing, and held the office 8 years, after which it was made elective by the people, under the new constitution of 1846. While in this position, he was the author of a number of most useful reforms in the discipline of the prison, mitigating its harshness, and improving its efficiency, greatly to the advantage of the inmates and of the state. In Nov. 1850, he became a partner with Mr. Bryant in the ownership of the "Evening Post," a position which he still holds. In Jan. 1850, he made a voyage to Jamaica, one of the fruits of which was his "Jamaica in 1850," a small volume on the economical, social, and political condition of that island, which had a rapid sale, and which was pronounced by some of the leading reviews and statesmen in Great Britain, the most valuable of modern works upon the subject. In the winter of 1854, he again sailed for the West Indies, visiting Hayti and St. Thomas, and during his journey collected materials for a work on Hayti, a few instalments of which have appeared in the "Evening Post."

BIGELOW, TIMOTHY, a lawyer of New England, born in Worcester, Mass., April 30, 1767, died May 18, 1821. He was the son of Col. Timothy Bigelow, who served in Arnold's expedition to Quebec, graduated at Harvard college in 1786, was admitted to the bar, and settled in practice at Groton, Mass., in 1789. He took an active part in politics as a firm federalist, was for 20 years a member of the state legislature, and 11 years speaker of the house of representatives, and a member of the Hartford convention. In 1807 he removed to Medford, and kept an office in Boston. One of his daughters married Abbott Lawrence, late minister of the United States to England. His legal standing and practice were at the head of his profession in his time; and in the course of 32 years, he was supposed to have argued 10,000 causes.

BIGLAND, JOHN, an English author, born in the year 1750, died in London in 1832. His books at the time of their appearance were greatly praised. The principal of them are a work on natural history, exhibiting the power,

goodness, and wisdom of the Deity, a work on the study of ancient and modern history, and a history of Spain, a French translation of which has recently been published in Paris. His books have been extensively used in the United States.

BIGLOW, WILLIAM, a New England school-master and poet, born at Natick, Mass., Sept. 22, 1773, died at Boston, Jan. 12, 1844. He was first established as a teacher in Salem, and in 1799 delivered a poem on education before the Phi Beta Kappa society at Cambridge. He then took charge of the Latin school in Boston, preaching occasionally, writing for different periodicals, and publishing educational textbooks. Here he fell a victim to intemperate habits, and was compelled to retire to his home in Natick. In this state of his fortunes it was his habit to lounge about the newspaper offices at Boston, write poetry for his friends, the editors, while the humor lasted, and then return to his rural retreat. He taught, also, a village school in Maine, and in the latter part of his life was employed as a proof-reader in the university printing office at Cambridge. He had a genial and pleasant humor, and was a ready versifier, as well as an agreeable prose writer. His "Cheerful Parson," and others of his songs, were much admired by his contemporaries, and are well worthy of remembrance. He also published, in 1880, a "History of the Town of Natick," and one of Sherburne, Mass. But his best and most numerous writings were in periodicals—the "Village Messenger," of Amherst, N. H., which he edited in 1796, the "Federal Orrery," and "Massachusetts Magazine."

BIGOT, MADAME MARIE, a German pianist, born at Colmar, March 3, 1786, died Sept. 16, 1820. At 18 she was married, and soon after removing with her husband to Austria, was enabled to complete her musical education under Haydn, Salieri, and Beethoven. Political causes compelling her husband to emigrate to France in 1809, she was there so fortunate as to receive the advice and instructions of such men as Cherubini and Auber, from whom she acquired much knowledge of the art of composition. In 1812 her husband accompanied the expedition to Russia, where he was taken prisoner. The straitened circumstances which this misfortune caused, induced Madame Bigot to open a school for instruction in music, which was soon thronged with scholars. Unfortunately, her health failed her here, and she soon died of an affection of the chest. She was a woman of genius, and was esteemed by Haydn and Beethoven, who bestowed the highest encomiums upon her. She was the first to introduce the music of Beethoven into France.

BIHERON, MARIE CATHERINE, a Parisian woman who attained to a rare skill in anatomy, born Nov. 17, 1719, died in 1786. She was the daughter of a physician, and devoted herself to the practice of fashioning in wax the members of the human frame. For 47 years

she worked in this department; her *chef-d'œuvre* was the model of a female figure arranged in small pieces, so that every part of it, both exterior and interior, could be examined in detail. The medical men of Paris were bitterly opposed to her, with the exception of Jussieu and Villoison. She was forbidden to take apprentices. Migrating to London, she succeeded better, and opened an anatomical exhibition, to which she charged half a crown as admission fee. The Russian ambassador bought it at her death for Catharine II.

BILA, a river of the island of Sumatra, which flows through the Batak territory, and is the chief avenue of communication from the sea with that interesting region. Its numerous branches water the lovely valleys of Mandheling, described by recent Dutch writers as surpassing in picturesque beauty, fruitfulness of soil, abundance and variety of the animal creation, soft serenity of climate, and happy condition of the people, any other portion of Sumatra or of the Indian islands. The frightful desert plains of Tobah and Partibi bound the valley of Bila on the north and south; the mountain ranges of Mertimpang and Draut enclose it on the west; and the sandy wastes, peopled by marauding Bajans on the eastern coast, complete the barrier that hems in this happy valley; leaving for the only outlet to its people the Bila stream, which disembogues into the straits of Malacca, in lat. 8° 28' N., about 220 miles from Singapore. The river is considered navigable about 85 miles for vessels drawing not over 13 feet water.

BILBAO, the capital of Biscay in Spain, on the river Nerva, 6 miles from its mouth at Portugalete; pop. 15,000. There is an old and a new town, the latter of which is well built; an arsenal, a navigation school, 5 churches, and several religious houses. The iron mines of Veneras, 5 miles from Bilbao, are extraordinarily productive, and the ore of fine quality. The river is navigable only for small vessels; larger ones bring up 8 miles below the town. The most important article of export is wool, beside which chestnuts, oil, and wine are sent to northern Europe. Bilbao was founded in 1800 by Don Diego Lopez de Haro, was occupied by the French in the wars of Napoleon, and during the Carlist wars was bravely defended against Zumalacarregrui, who was mortally wounded here June 10, 1835.

BILBERRY, or BLUEBERRY, the name of a shrub and its fruit, a species of *vaccinium*, or whortleberry. There are 2 kinds of this shrub: a taller and a dwarf variety. The fruit of the dwarf shrub in Europe, and that of the taller variety in Canada and the United States, are both called bilberry.

BILDERDIJK, WILLEM, a Dutch poet, born in Amsterdam, Sept. 7, 1756, died at Haarlem, Dec. 18, 1831. Familiar with the languages and literature of Greece, Rome, and of the principal modern European nations, he also had a large acquaintance with jurisprudence, history,

antiquities, geography, geology, and theology. In the university of Leyden, where he devoted himself to every branch of erudition, he gained 3 prizes for poems, the subject of one of which was the influence of poetry on political government. He published a volume in 1779, principally of imitations and translations of the Greek poets, and the next year gained a prize from the literary society of Leyden on the relations between poetry and philosophy. He soon after adopted the legal profession, practised as an advocate at the Hague, attached himself to the house of Orange, thereby incurring the enmity of the patriots, and was obliged to emigrate when the French army under Pichegru invaded Holland in 1795. He travelled through Germany, remaining 2 years at Brunswick, where he published various small pieces, a didactic poem on astronomy, and a translation of Voltaire's *Ce qui plait aux dames*. He passed thence, in 1800, to London, where he lectured upon literature, and translated into Dutch many of the poems of Ossian. Returning to Amsterdam in 1806, he was presented to King Louis Bonaparte, and became his instructor in the Dutch language. He received a pension, and was made a member of the institute of Holland, but upon the abdication of King Louis in 1810, lost his pension, was regarded with suspicion by the imperial police, and, leaving Amsterdam, supported himself till his death in small provincial cities by philological labors. Yet in whatever circumstances, he never ceased to cultivate the muses, and hence the immense number of his poems, of almost every variety, from the epigram to the epic. Possessing great vigor of imagination, richness of thought, and an easy and harmonious style, his countrymen place him by the side of Schiller and Byron, and his works are better known out of Holland than almost any others in Dutch literature. Beside numerous smaller poems, translations, and patriotic fragments, he left a number of tragedies, and a strange epic poem on the "Destruction of the First World."

BILE, the green and bitter liquid secreted by the liver. This liquid presents differences in the various classes of animals, although its principal characters are everywhere the same. Taken from the gall-bladder, it is a mucous, viscous, somewhat transparent fluid, capable of being drawn out in threads of a green or brown color, of a bitter but not astringent taste, sometimes leaving a rather sweet after-taste, and of a peculiar odor, often having, when warmed, the smell of musk. It is usually weakly alkaline, often perfectly neutral, and only in disease, in rare cases, acid. It differs from other animal juices in being very long before putrefying, when the mucus mixed with it has been taken away. The chemical composition of bile is still but little known, the best chemists being in complete disagreement in this respect. However, there are some points which seem to be decided. For instance, there

is in bile a resinous substance, which is a combination of 1 or 2 acids with soda; there is a coloring principle (the *biliverdin*), a peculiar fatty matter, the *cholesterin*, and other fatty substances, salts, and water. According to Demarçay, the bile of oxen has the following composition:

Water.....	875
Choleate of soda.....	110
Coloring and fatty matters, mucus, &c.....	5
Salts.....	10
	<hr/> 1,000

Demarçay admitted only 1 acid in bile, and he considered this liquid as a fluid soap, resulting from the combination of this acid (choleic acid) with soda. Strecker has found that the cholic acid of the French chemist is a complex one, and he has shown that it is composed of 2 acids, one of which he calls cholic and the other choleic. According to the researches of Bensch and Strecker, the choleate of soda is the chief principle of bile, as regards its relative quantity, and also its importance. The choleic acid is a nitrogenized substance, containing sulphur in greater proportion than the other nitrogenized matters. As in the bile of most of the animals sulphur exists only in the choleic acid, and in the proportion of 6 per cent., it is possible to ascertain easily the quantity of this acid in any kind of bile. It has thus been found that almost the whole of the alcoholic extract of bile consists in choleic acid in the fox, the sheep, the dog, &c., while in the bile of the ox there is as much cholic as choleic acid. The salts formed by these 2 acids amount to at least 75 per cent. of the whole of the solid constituents of bile. Normal human bile contains, according to Frerichs, about 14 per cent. of solid constituents, but Lehmann justly remarks that the quantity of water, and, consequently, the proportion of solid constituents, may be as variable in bile as in most of the other secretions. Gorup-Besanez found 9.18 per cent. of solid constituents in the bile of an old man, and 17.19 per cent. in that of a child aged 13 years, but many more proofs are necessary to determine that bile is more aqueous in old age than in childhood. Lehmann says that the organic constituents of human bile amount to about 87 per cent. of the whole solid residue. The proportion of the other elements of bile, i. e., bile-pigment (biliverdin), cholesterin, fats, and mineral salts, has not yet been positively determined. The 2 special organic acids of bile can be decomposed into various substances. They both, when treated by alkalies, give origin to cholalic acid, and to dyslysine, but one of them (the cholic acid) produces also glycocoll, and the other (the choleic acid) taurine. When treated by powerful acids, cholic acid gives origin to choloïdic acid, glycocoll, and dyslysine, while choleic acid produces taurine, choloïdic acid, and dyslysine. Cholesterin and margaric and oleic acids are kept in solution in bile by the two principal organic acids of this secretion. The biliverdin, or the coloring principle of bile, is a substance re-

sembling in its composition the hematosin or coloring principle of blood. It contains nitrogen and iron, as do all the organic coloring matters, according to M. Verdeil. The biliary sugar, or picromel, seems to be only a product of decomposition of some of the constituents of bile. The biline of Berzelius and Mulder seems to be a mixture of alkaline cholates and choleates.—The ancient physicians and physiologists used to consider the organ which secretes bile, the liver, as a most important one. But after Aselli, in 1622, had discovered the lymphatic vessels, a reaction took place against the importance attributed to the liver, and some physiologists went so far as to think that its share in the vital actions was almost null. In France the researches of many physiologists, and particularly of Prof. Bernard, have shown that the liver is one of our most important organs, and recent experiments have proved that bile is a very useful secretion, if not an essential one. The first question we will examine is whether or not bile is an absolutely necessary secretion. In many dogs Schwann opened the abdomen and the gall-bladder, and succeeded in forming a biliary fistula, after having tied the bile duct. Nine of these animals very quickly died; 6 lived 7, 13, 17, 25, 64, and 80 days. Two only survived definitively, but in them a new bile canal was formed. Of the 6 dogs that lived from 7 to 80 days, 4 seemed to die starved, having lost their fat. The 2 others after a few days began to regain their fat, and reached their initial weight up to a certain time, when they became again emaciated and finally died. Blondlot has seen a dog living 5 years after the occlusion of the bile duct, and the formation of a biliary fistula, through which the bile flowed out. During this long period the health of the animal was usually very good. Unfortunately, no precaution was taken to prevent its licking the wound, and probably it took and swallowed in this way a certain amount of bile. More recently Schwann has repeated his experiments on 20 dogs, out of which only 2 survived, one 4 months and another a year. Nasse kept a dog alive 5 months with a biliary fistula. Its appetite was good, and it ate about double the quantity of meat that a healthy dog of the same size would have taken, and nevertheless it died almost completely deprived of fat. It results from very careful experiments of Bidder and Schmidt, and of their pupil, Schellbach, that the cause of death when bile is not allowed to flow into the bowels, and passes out of the body, is that the animal has a great difficulty in repairing the loss of fat and of nitrogenized substances, which go out with the bile. In a dog operated upon by these physiologists, the quantity of food taken was much greater than before the operation, and the consequence was that the animal did not lose his forces and remained fat, though less so than before. Prof. Bernard, according to Dr. Porchat, has ascertained that if adult dogs may live many months when bile flows out of their body

by a biliary fistula, it is not so with young dogs, in which death always occurs quickly in such circumstances. Some facts observed in men (in children by Dr. Porchat, in adults by Dr. Budd) seem to prove also that adults may live much longer than children when there is no bile passing into the bowels. Can we conclude from all the preceding facts that bile is not necessary? Can we say, with Blondlot, that bile is a useless secretion? It seems very probable that bile is not absolutely necessary to digestion, as some animals have lived a long while without bile; but even in these cases there is room for doubt. For instance, Blondlot's dog was not prevented licking its wound, and probably swallowed a little bile, as Schwann has seen his dogs doing; and Bidder and Schellbach, we cannot understand why, at times, gave pieces of liver (containing bile) as food to the one of their dogs that was the least affected by the operation. We may sum up thus: 1. That bile has not yet been positively proved not to be absolutely necessary to digestion and to life. 2. That it seems probable, however, that its function is not absolutely essential. 3. That when bile is missing in the bowels (and flowing out of the body by a fistula), the principal cause of death is the loss of fat and of albuminous matters. We will add to this last conclusion, that, according to Dr. Brown-Séquard, it would be very important to repeat the experiments of Blondlot, Bidder, and others, in trying to repair by food the loss of certain materials of the body which go out with bile, and which are not present in sufficient amount in meat and bread. Among these materials sulphur is the principal, and it would be easy to give a great deal of it by feeding the animals upon eggs and other kinds of food which contain more sulphur than meat and bread. This view of Dr. Brown-Séquard is grounded, not only on the fact that bile flowing out of the body takes away a great quantity of sulphur and other principles, but also that when bile passes freely into the bowels, its elements, and particularly soda and sulphur, according to Liebig, are absorbed.—A question which is intimately connected with that we have examined already concerning the importance of bile, is whether this liquid is to be considered as an excrement or as a useful secretion. We think it is certain that some, at least, of the principles of bile are absorbed in the bowels, if not most of them, as Liebig thought, and that, therefore, bile cannot be said to be entirely an excrement. However, some of the compound constituents of bile are transformed in the bowels, as Mulder and Frerichs have shown, and they are expelled with the fecal matters. We are consequently led to conclude that bile is only partly an excrement, if it is so at all. We say if it is so, because the part of it which is expelled with the fecal matters, may have some use before being expelled.—The fact that there is a very great quantity of bile secreted in a day, throws some light on the question of its reabsorption. Blondlot says that a

dog of a medium size secretes from 40 to 50 grammes (nearly 1½ ounce) a day. Nasse and Platner speak of 300 grammes (6½ ounces), as the secretion of bile in a dog weighing 10 kilogrammes (20 lbs), which gives a proportion of 1 to 50. Schmidt and Bidder have found that the quantity of bile varies extremely with the species of the animal experimented upon. While for each 2 pounds of the body of a cat there is a secretion of 14 grammes (½ an ounce) of bile in a day, in the dog there is almost 20 grammes (¾ of an ounce), in the sheep 25½ grammes (½ of an ounce), and in the rabbit the enormous quantity of 136 grammes (4½ ounces). In weighing the solid residue of the fecal matters of a dog for many days, and comparing the result obtained in so doing to the weight of the solid residue of bile during the same time, Schmidt and Bidder have found that the two quantities were alike, so that necessarily a good part of the principles of bile is absorbed in the bowels. They have also ascertained that almost all the sulphur of the bile is absorbed. They think that only a small quantity of bile transformed into an insoluble substance (dyslysine) remains unabsorbed and goes out with the excrements.—Sylvius de le Boë, and afterward Boerhaave, have imagined that bile is employed to neutralize the product of gastric digestion, chyme, which is very acid. This view has been considered quite wrong by almost every one, but Lehmann justly remarks that there is some truth in it, and he affirms that bile certainly contributes to the neutralization of the free acids of chyme. Bile no doubt acts as a solvent of fat, at least by one of its constituents, the choleate of soda, as has been shown by Strecker, although Bidder and Schmidt have found no difference in the quantity of fat absorbed, whether the bowels contained bile or not. But their mode of deciding this question is open to many objections. It has been said that bile prevents putrefaction taking place in chyme, or at least in fecal matters. Most of the recent experimenters agree with Tiedemann and Gmelin in admitting this influence of bile. Dr. Porchat has observed, in children in whom bile could not pass into the bowels on account of the occlusion of the bile duct, that the fecal matters were putrefied, as Bidder and Schmidt, Frerichs, and others, have observed in animals in which they had tied this duct. However, it seems that in some cases the absence of bile is not sufficient to allow putrefaction to take place in the fecal matters, as Blondlot says that he has observed no difference between these matters in dogs in good health and in those operated upon. The water contained in bile helps in the dissolution of certain elements of chyme, and, in so doing, renders their absorption more easy.—Bile acts as an excitant on the mucous membrane of the bowels, to produce reflex contractions; it favors, in this way, the propulsion of food and of fecal matters. According to Schiff, bile produces contractions in the intestinal villi. It is said, also, that bile increases the secretion of

the intestinal mucus, and prevents constipation. All these views may be partly true, but it is certain that, without bile, the expulsion of fecal matters takes place regularly.—Many physiologists think that bile, like most of the secretions, contains some effete matters which cannot be of any use in the blood, or which might be deleterious. In opposition to the views of those who admit that the secretion of bile is for the purpose of purifying the blood, and who still regard this liquid merely as an effete carbonaceous matter which the respiration has not removed, Lehmann says that the bile—a secretion by no means poor in nitrogen and hydrogen—is not separated in any increased quantity when the process of oxidation in the lungs happens to be disturbed; that there are no pathologico-anatomical facts which favor the view that the liver can act vicariously for the lungs; and, lastly, that the separation of carbon by the liver, as compared with that by the lungs, is so trifling, as shown by Bidder and Schmidt, that the liver can hardly be regarded as essentially a blood-purifying organ, in so far as the elimination of carbon is concerned. However, it is certain that when bile is not excreted freely in man, jaundice, and frequently certain nervous disturbances, are produced, and these phenomena must be attributed to the action of some of its principles. But 3 explanations may be given concerning the production of these phenomena, and we do not yet positively know which is the best. In the first place, it may be that the principles of bile preëxist in the blood, and that when they are not secreted, their quantity increasing, they produce the deleterious influence which sometimes results in jaundice; in the second place, they may be secreted, and in consequence of some obstruction of the bile duct, they may be absorbed, and then produce their ill effects; finally, in the third place, they may be changed into toxic substances either in the blood or in the liver, or the biliary ducts. As regards the first of these views, Lehmann has tried to prove, on good grounds, that the secretion of bile is not, like the urinary secretion, a mere separation of certain principles from the blood; and, therefore, we may conclude that it is not probable that bile, even if it contains toxic substances, results from a depuration of the blood. If we admit the second view, that the liver produces most of the principles of bile, and that these principles are absorbed in cases of jaundice, we find that we cannot explain the toxic phenomena which then sometimes take place, because they are not constant, and they exist in cases where jaundice is or is not very considerable, while they may not appear in cases of deep jaundice. Dr. Budd has been led to the third view above stated, which is that poisonous substances are formed in the blood from the principles of bile. The function of depuration of the blood, attributed to the liver, seems, therefore, to be of much less importance than some persons have thought. Dr. Budd relates several

cases in which the passage of bile into the bowels was entirely prevented by the complete closure of the bile duct, and in which, nevertheless, life was prolonged for many months. We must say, however, that the secretion of substances which may, when they are absorbed, and when they accumulate in the blood, be transformed into a poison, ought in some respects to be considered as a depuration. —It has been a much debated question whether bile is secreted from the blood of the portal vein or that of the hepatic artery. Experiments on animals and pathological facts have been mentioned in favor of both these opinions. When a ligature is placed on the portal vein, bile not only continues to be secreted, but the other functions of the liver also continue; but this fact, as Brown-Séquard remarks, cannot prove that the blood of the portal vein is not necessary for these functions, as this blood, after the ligature, passes into the vena cava, and afterward into the arterial circulation, and, therefore, into the liver, by the hepatic artery. It seems very probable, indeed, from the great quantity of bile produced in a day, that the portal blood, if not the only source of the secretion of bile, is at least employed in a great measure for this secretion.

BILFINGER, GEORG BERNHARD, philosopher and mathematician, born at Canstadt, in Württemberg, Jan. 28, 1698, died at Stuttgart, Feb. 18, 1760. He was born with 12 fingers and 12 toes, and submitted to an operation which removed the deformity. He studied with Wolf at Halle, and became a disciple of the school of Wolf and Leibnitz. In 1725 he received an invitation from Peter the Great, to the chair of logic and metaphysics in the new college at St. Petersburg. He now solved the problem of the cause of gravity proposed by the academy of sciences at Paris, and gained the prize. Being recalled by the duke Charles Edward of Württemberg, he returned to Tübingen and proceeded to lecture on theology; here his originality in style and ideas soon made him popular, and in 1735 he was appointed a privy councillor. In his new position he proved himself to possess administrative abilities, and by severe study he soon became as celebrated for his political and statistical knowledge as for his scientific attainments. He afterward paid particular attention to agriculture, and promoted the culture of the vine. He was the author of numerous theological and philosophical works.

BILGUER, PAUL RUDOLF VON, a famous chess-player, born at Schwerin, Germany, in 1808, died in Berlin Oct. 6, 1840. He entered the Prussian army in 1838, and was, not long afterward, promoted to a lieutenancy. On March 18, 1840, he performed at Berlin the curious feat of playing 8 games at once with as many different opponents, conducting 2 of the contests without seeing the boards and men. This intense mental effort is supposed to have been the primary cause of the illness which resulted in his death. His *Handbuch des Schach-*

spiel (Berlin, 1848 and 1852), completed after his death by his friend T. Heydebrandt von der Lasa, made an epoch in the history of chess, and is still the best practical work on that game.

BILIARY DUCTS are small ducts through which the bile flows from the liver and the gall bladder to the duodenum. That portion of the biliary duct which leads directly from the liver to the duodenum gives off a small branch which leads into the gall bladder, in which the gall is collected. This small branch is called the cystic duct, and that part of the larger bile duct which leads from the liver to this cystic duct, is called the hepatic duct; while the rest of the bile duct, leading from this point of junction to the duodenum is called the *ductus communis choledochus*. This is about the size of a goose quill, and 8 inches long.

BILIOUS FEVER is caused by marsh miasmata, and is most common in the middle and southern sections of the United States, although it occurs in all parts, from the northern lakes to the gulf of Mexico. The localities in which it is most frequent are the western prairies, the valleys of streams, the borders of lakes and ponds, and the neighborhood of marshes; the seasons in which it occurs are the summer and autumnal months. In this form of fever, the febrile phenomena are characterized by striking exacerbations and remissions, one paroxysm occurring in the 24 hours. It is called bilious remittent fever, and differs from intermittent fever in the intermission not being complete. During several days previous to the attack, the patient complains of lassitude, with uneasiness at the epigastrium or region of the stomach, pains in the back, in the limbs, and in the head, and also restlessness at night. The invasion is attended by coldness of the surface, and not unfrequently by shivering. This is soon superseded by heat, febrile flushes, or by alternations of heat and cold; which are soon succeeded by burning heat and dryness of the skin, flushing of the countenance, and injected eyes, with great increase in the headache and pains of the back and limbs. The tongue is foul, and the mouth sometimes dry and clammy. There is nausea, and sometimes vomiting, with much thirst. The pulse, which was weak and quick during the cold stage, is now full and strong; the breathing may be hurried, and the patient is extremely restless. The throbbing and pain in the head are occasionally very violent, and may end in delirium. The urine is scanty and highly colored; the bowels usually constipated, and some degree of tenderness is felt on pressing with the hand over the stomach. After some 12 or 18 hours, these symptoms are succeeded by partial perspirations and an abatement of the febrile symptoms; or these may subside without any moisture on the skin. The remission is marked by the pulse being less full and frequent, the skin cooler, and the pains in the head and back and loins relieved; the stomach is in a less irritable state, and the patient free from delirium. Nine or ten

hours elapse before another paroxysm occurs, which may come on at once, without any feeling of cold, or be preceded by chilliness or shivering. The disease continues in this manner with alternate remissions and paroxysms of fever. If the case end favorably, each succeeding paroxysm becomes milder, until the fever disappears; or it may be carried off by copious perspirations. The periods of remission and increased severity are very irregular, though the abatement of the fever very generally occurs in the morning. In cold climates the disease may continue 14 days or more, but in hot countries it is much more rapid in its course, terminating sometimes as early as the 8d day, and usually in 5 or 7 or 9 days. In the more violent and dangerous cases, the skin is burning hot and the thirst intense; the vomiting incessant, scarcely any thing being retained on the stomach. There is also violent throbbing or shooting pain of the head, attended sometimes with furious delirium. The remissions are short and indistinct; and where the case proceeds to a fatal termination, the fever may become continued. The tongue is furred, red, contracted, and dry, or crusted with black matter; the skin and eyes may have a yellowish tinge, and dark-colored matter may be discharged from the stomach. In some cases there are copious perspirations before death, and the patient sinks rapidly; or the hot, pungent, dry skin may continue to the last.—Bleeding was formerly deemed necessary in bilious fever, but is only now employed in cases of actual or threatened inflammation, or active congestion. It is acknowledged that it cannot cure or shorten the disease, although it may subdue a violent and dangerous inflammation. It was formerly the practice also to commence with an emetic; but this is only indicated where there are crude ingesta or an accumulation of bile in the stomach, shown by frequent retchings and a bitter taste in the mouth. In all cases an active cathartic is deemed necessary, and jalap and rhubarb combined with calomel are mostly used, but calomel is discontinued altogether by some practitioners, and the extract of May-apple or *podophyllum peltatum* substituted in its stead. The root is the part used and in doses of from 10 to 20 grains. It is also used alone, and alternately with *pulvis jalapa compositus*, which is a mixture of one part of jalap and two parts of cream of tartar. Diaphoretics are always indicated in the hot stage, and the "effervescent draught" is perhaps the best in an irritable state of the stomach; but water, with anything to flavor it agreeably to the taste of the patient and the susceptibility of the stomach, is the main agent in producing perspiration to relieve the fever. Cold sponging of the surface of the body with vinegar and water is sometimes very useful, where it does not give a sensation of chill; and where the head is much affected, the application of cold water is very beneficial. As soon as a remission takes place, which may be known by an abatement of all the symptoms, the sulphate of quinine

should be administered. In hot climates the remission may be short and not very marked, but the opportunity should not be lost. Two grains of quinine, in a little water, or in wine and water, may be given every hour or every two hours during the remission. It must be observed, however, that the same dose will not suit every individual; some persons can hardly bear the smallest quantity, while others require larger doses to produce a decided effect. It is always prudent, therefore, to commence with minute doses and increase the quantity, if necessary, afterward. The exhibition of quinine must be suspended on the recurrence of the febrile symptoms, and resumed during the period of remission. It should be continued in diminishing doses, during several days after the fever has entirely disappeared, to prevent a return, which is not uncommon where the treatment is too soon discontinued. Where sudden sinking of the vital powers occurs, the pulse becoming feeble and irregular, the face pallid, the eyes sunken in their sockets, and the limbs cold and clammy, stimulants should be immediately given. Port wine or brandy, sherry or madeira, in sago or in arrow-root, should be given every hour, or oftener, until the pulse begins to rise and the extremities are warm. Champagne is also an excellent stimulant in all such cases. When the pulse has been restored and warmth in the extremities, the stimulants are discontinued, the cold perspirations constantly wiped off, and the extremities are rubbed with warm flannels or rough towels; opium may also be administered in minute doses, to allay excessive pain and restlessness. The patient's drink should consist of barley-water, lemonade, soda-water, or pure cold water, when agreeable to him. Liquids should not be taken in large quantities at once, where the stomach is very irritable; but where it can be borne with ease, and is grateful to the patient, a very copious draught of cold water is sometimes very beneficial in producing perspiration, when other things have failed. In the low malignant varieties of bilious remittent fever, effervescing drinks, such as seltzer or soda water, light beer, &c., are often very beneficial. Change of air is also very desirable during convalescence.

BILL, BROWNBILL, GLAIVE, VOULGE, or GIB-ARME, all names for nearly the same instrument, which, with some slight modification, was the standing weapon of the English infantry at close quarters, as was the long bow their weapon at distant range, from the days of the battle of Hastings, at which the Saxons used the bill and the Normans the bow, until those of Queen Elizabeth; for the English were never spearmen, nor ever fought in heavy columns, like the Scots and Swiss, until after the musket had superseded the bow; when, for a short time previous to the invention of the bayonet, the pike was used, during the wars of the commonwealth and of the Low Countries. The original brownbill was a ponderous cutting

weapon with 2 edges, that forward of the shaft having a concave or sickle blade, that to the back, a sort of angular cutting face, the upper part projecting before the base, so as to give a drawing blow. This terrible instrument was nearly 8 feet in length, and 10 or 12 pounds in weight, set erect on a shaft of 8 or 4 feet. It was wielded with both hands, and could sever a horse's head or a man's thigh or shoulder, through the strongest mail or plate armor, as a modern woodman's bill-hook slices off a hazel sapling. The weapon was afterward lengthened and lightened, and provided with a spear head, so that the holder could charge it like a lance, and sometimes with a cutting hook, for severing the bridles of the men-at-arms, or pulling them out of their saddles.

BILL, in congress or parliament. See *Act*.

BILL IN EQUITY, is the preliminary proceeding of an equity suit. The bill contains a statement of the plaintiffs' case. In English law it is addressed to the lord chancellor, and commencing with the names of the plaintiffs, proceeds to state the circumstances of their case, and the grievance to be redressed; setting out all documentary evidence relied on. From the statement it proceeds to charge against the defendants, collectively or individually, the various facts which either specifically or by induction constitute the gravamen of the case. It concludes with the prayer for relief, and with interrogatories both general and specific, to which the plaintiffs require an answer. The bill may not join distinct subjects of complaint; if so, it is objectionable for multifariousness. It must be as compendious as possible, otherwise its length is liable to be reduced at the plaintiffs' cost. It must contain no irrelevant matter, otherwise it may be excepted to for impertinence; nor scandalous matter, that is, the narrative of mere hearsay report, or as personally offensive expressions, which may be expunged. The introductory or narrative part must support the charging part; the charges must cover all the case intended to be made against the defendants, and the interrogatories must demand specific information, either affirmation, denial, or explanation, upon all those points which are important to the establishment of the plaintiffs' case. As new facts come to the plaintiffs' knowledge, either from the defendants' admissions or from other sources, the bill may be amended, and new interrogatories added, while bills of revivor and supplement are filed to bring the representatives of deceased parties or of newly born children before the court. This form of procedure necessarily leads to an immense quantity of verbiage and repetition, but adherents of the practice affirm that it is warranted by experience. In answer to the recommendation of law reformers that every thing stated by the bill shall be assumed to be matter of inquiry, and that every thing not expressly denied by the otherside shall be taken to be admitted, they reply that this was the ancient practice, and that the modern is an improvement on it. The ancient

practice, it is said, led to the introduction of infinitely greater prolixity, both of statement and counter statement, while the suitor suffered because the gist of his case was not concisely brought to the notice of the court. By the New York code of procedure, the distinction between law and equity is abolished. Every suit is designated a civil action, and is commenced by the same process. The complaint is now the substitute for the bill in equity, and presents the facts of the plaintiffs' case in a much more compendious shape. Whether that merit is fully attained is, however, an open question.

BILL OF EXCHANGE. See *EXCHANGE*.

BILL OF HEALTH, that part of a ship's papers which relates to the health of the crew and passengers. It is authenticated by the captain and medical man on board, and sometimes by the consul at the port of embarkation. A false return subjects the offender to severe penalties. Vessels coming from ports in which plague, yellow fever, or other infectious diseases are prevalent, are of course objects of particular attention. A clean or a foul bill of health determines as to the necessity of quarantine.

BILL OF INDIOTMENT. See *INDICTMENT*.

BILL OF LADING, a commercial instrument, signed by the master of a ship as the receipt for cargo to be conveyed as freight. This document specifies the goods, the ship, the price, and the port of delivery, with such other particulars as may be requisite. It stipulates for their safe delivery, and constitutes the contract between the shipper and the ship owner. It is generally signed in duplicate, the 2 parts of which are transmitted to the consignee by different channels. Certain exceptions are usually mentioned, against which the carrier does not guarantee the goods, as the acts of God, enemies in time of war, fire, and the accidents of navigation. The goods are usually deliverable to consignees or their order, sometimes to the order of the shipper, upon payment of freight, as mentioned, *primage* and *average*. *Primage* is a perquisite to the master—a small percentage on the freight. *Average* is the share in certain small expenses of the ship—*pilotage*, *towage*, harbor dues, &c. The bill of lading is assignable, and transfers the ownership of the goods; accordingly, the assignee can maintain an action for recovery of the goods themselves. But an action for damages for non-delivery of the goods in good order must be brought by the shipper. The master's contract is complete on delivery of the goods, in good order, at the usual place of delivery of the port, and upon notice given thereof to the consignee, unless there be any particular stipulation as to the mode of delivery.

BILL OF RIGHTS, in English constitutional law, is, properly, the act of parliament 1 William and Mary (sess. 2, c. 2), by which certain claims contained in the declaration of rights were enacted as fundamental principles

of political liberty. The declaration had been delivered at the time the crown was tendered to the prince and princess of Orange, Feb. 18, 1689. It recited the principal grievances which the nation had suffered under the preceding reign, viz.: the assumption as a royal prerogative to grant a dispensation from penal acts of parliament—the establishment of a new tribunal to determine ecclesiastical questions—levying taxes without consent of parliament—maintaining a standing army in time of peace—interfering with the administration of justice and the freedom of elections—exactng excessive bail from prisoners—inflicting barbarous and unusual punishments, and treating as criminal petitions for a redress of wrongs—all of which acts were declared to be illegal. It then asserted the right of subjects to petition—the right of parliament to freedom of debate—the right of electors to choose representatives freely—and various other privileges. These were reiterated in the act of parliament above referred to, with some additional stringency, as in respect to the dispensing power, which by the declaration had been condemned, as exercised by James, as unlawful, but by the act was absolutely and forever taken away. These rights were again asserted, with some additions, in the act of settlement, by which the crown was limited to the Hanover family (12 and 18 William III., c. ii.). Similar provisions were appended to the constitution of the United States, as amendments thereto. They are chiefly declaratory of the freedom of speech and of the press—of the right of citizens peaceably to assemble and petition government for the redress of grievances—of the right of trial by jury—that private property shall not be taken for public use without just compensation—that no law shall be passed by congress for the establishment of any religion, or prohibiting the free exercise thereof. In the constitutions or laws of many of the United States is to be found a similar recital of rights, usually including the privilege of the writ of habeas corpus.

BILL OF SALE, an instrument in writing by which personal property is transferred. It is not necessary that it should be under seal, nor is there any difference in the legal effect, other than that the seal imports a consideration; but by the laws of the state of New York even this distinction is virtually abrogated, as the consideration of a sealed instrument can now be inquired into the same as that of any other contract, and the same provision has been adopted in other states. A bill of sale of a ship or vessel is a muniment of title of peculiar importance. In most countries it is either by custom or statute absolutely required. In this country possession of a ship and acts of ownership are presumptive evidence of title, without documentary proof. But this presumption may be rebutted by contrary proof, and the general rule is that a person who has no title can convey none. Mere possession

by the vendor is not sufficient to enable him to give a title, although as between the parties the mere delivery of possession is sufficient without a bill of sale.

BILLAUD-VARENNE, JACQUES NICOLAS, a leading member of the French national convention, born at La Rochelle, April 23, 1756, died in Hayti, June 3, 1819. He studied law, and after leading for several years a vagrant life, he finally, in 1785, became an advocate at Paris. He published at Amsterdam, in 1789, a book called *Despotisme des ministres de France*, which was a "full recital of the principles and means used by the aristocracy to keep France in bondage." He renewed his attacks in his pamphlet *Plus de ministres!* which appeared in Paris the following year. Meanwhile, he had assailed the clergy in 2 anonymous publications: *Dernier coup porté aux préjugés et à la superstition*, and *Le peintre politique*, both issued in London, but largely circulated in France. July 1, 1791, at one of the meetings of the "Friends of the Constitution," he proposed to change the French monarchy into a republic; and the same year he published his celebrated pamphlet *Acéphalocratie*, which was followed by a prosecution, ended Sept. 1791, when Louis XVI. took the oath to the constitution, and granted a general amnesty for political offences. Among the Jacobins, Billaud distinguished himself by his ultra opinions. He was appointed, Aug. 10, a member of the commune of Paris, then substitute to the "procureur-syndic," in place of Danton, who had just been promoted to the department of justice. Sent to Chalons to watch some suspected generals, he returned Sept. 20, 1792, to take his seat in the convention, to which he had been elected by one of the districts of Paris. There he pursued the same course of deadly opposition to the monarchy and monarchists. In 1793 he supported the resolution to try Louis XVI. forthwith, and voted not only for the death of the king, but for that of the queen and ministers. He had, beside, a hand in nearly all the extreme measures which were then adopted against so-called internal enemies. He supported the charge by which the unfortunate general Custine was sent to the scaffold. He obtained the repeal of the decree forbidding domiciliary visits during the night, and supported the motion to form a revolutionary army. As a reward for his zeal, he was chosen president of the convention, and member of the committee of public safety. In this capacity, he founded the *Bulletin des lois*, a valuable collection, which is yet continued, and was the framer of the revolutionary government. In 1794 he became dissatisfied with the conduct of Robespierre, especially his aspirations to the dictatorship; so that on the 8th Thermidor he joined the party bent on the overthrow of the new tyrant, and contributed to their success; but this did not save him from being afterward suspected and accused by them. Finally, an inquiry into his acts was ordered, and he was arrested in company

with Collet d'Herbois and Barrère. His popularity among the citizens of the suburbs was so great, that they attempted to rescue him by force on the 12th Germinal; but the mob was quelled, and he, as well as his companions, was sentenced to transportation. Then a more formidable insurrection broke out on the 1st Prairial; but he had already been sent to Cayenne with Collet d'Herbois. There he lived for 20 years in savage retirement, refusing to avail himself of the amnesty offered by Napoleon, after the 18th Brumaire. In 1816, however, he escaped from Cayenne, and went to Port-au-Prince, where, proud and lonely, he barely made a living by the law. Three years later, he died, as stern and immovable as ever.

BILLAULT, AUGUSTE ADOLPHE MARIE, a French statesman, born Nov. 12, 1805, at Vannes, in the department of Morbihan. After studying the law at Rennes, he removed to Nantes, where he practised with success. He managed to be elected in succession a member of the municipal council of Nantes, and a member of the general council of the department of Loire Inférieure. He now published pamphlets upon education in France, municipal organization, roads, &c. In 1837, when only 31, his popularity in his department had become so great, that he was chosen to the chamber of deputies by 8 electoral districts. His style of oratory was at first little to the taste of the chamber; but notwithstanding his unsuccessful début, he soon secured for himself a conspicuous place in the assembly by activity of mind, industry, and practical knowledge. As early as 1838, he was appointed a member of the committee to devise a general plan for railways throughout France; the reports which he drew up commanded general attention. On the formation of the Thiers cabinet, March 1, 1840, he accepted the situation of assistant secretary to the minister of agriculture and commerce; but when Thiers was overthrown by Guizot, Billault resigned also. When the treaty upon the right of search, concluded Dec. 20, 1841, by Guizot, was presented to the chamber, Billault made himself conspicuous among its opponents, and his speeches greatly contributed to its defeat. He also took an efficient part in the debate on the Pritchard indemnity. During the following years, he shared in nearly all important discussions, showing a marked preference for questions of foreign policy. He was reckoned among the members of the opposition, and frequently indulged in denunciations of government corruption; he however became the legal adviser of the duke of Aumale, the richest son of Louis Philippe. At the same time he affected to consider himself as the necessary successor of Guizot; but his ambitious aspirations were defeated by the sudden outbreak of the revolution of February, 1848. Being elected to the constituent assembly by a large majority, he now declared himself a republican, voted with the most advanced party, and went so far as to support the democratic project known as the

right to labor. He was not elected to the legislative assembly, and returned to the practice of law. He had early intercourse with the new president, Louis Napoleon, and was frequently called on by him for political advice. On the coup d'état of Dec. 2, Billault at once gave his hearty adhesion to the new régime. He presented himself as the government candidate to the legislative body in Feb. 1852, and was chosen by a handsome majority. He was made president of that assembly, which post he held for a little over 2 years, his nomination as minister of the interior, March 24, 1854, not preventing his continuance in the presidential chair to the end of the session; and on June 6, he presented to the emperor an able report of the proceedings of the body. His acts as a minister are not unworthy of the reputation he had previously acquired as a practical politician. After the attempt against the life of Napoleon III., by Orsini and his accomplices, Jan. 14, 1858, Billault tendered his resignation, expressing a desire to retire to private life; and in Feb., Gen. Espinasse was appointed his successor as minister of the interior, with the additional title of minister of general safety.

BILLE, STEEN ANDERSEN, a Danish rear-admiral, and minister of marine, born in Copenhagen, Dec. 5, 1797. Following in the footsteps of his father, who was born Aug. 22, 1751, and died April 15, 1838, and who distinguished himself on various occasions, especially during the memorable siege of the Danish capital by the English, young Bille entered the navy at an early age. In 1819 he joined the French service, and in 1823 he took a part in the Spanish campaign. Subsequently, he was engaged in the naval service of Denmark, and stationed for several years in transatlantic countries, and in the Levant. In 1840 he served on board the *Bellone* during the expedition of that vessel to South America; and in 1845, he made, in the *Galathea*, a voyage round the world, which was undertaken under the auspices of the government, in the interests of commerce and science. On his return to Denmark, he found a new sphere of activity in the Schleswig-Holstein war, during which he was employed in the blockade of the Elbe and Weser, and of the Holstein coast. Finally, in 1852, he was appointed minister of marine, councillor, and rear-admiral. He has been frequently a contributor to the literature of his country. His principal production is an account of his voyage round the world, of which the third and last volume appeared at Copenhagen in 1851.

BILLIARDS, a game played with ivory balls, on a flat, oblong table covered with green cloth, having raised, elastic, cushioned edges, with semi-circular apertures, one at each corner, and 2 facing each other, at the centre of the long sides. The dimensions of a full-sized billiard table are 12 feet by 6. The bed, or level surface, over which the cloth is strained as tightly as possible, is composed, in the best improved modern tables, of slate, and the cushions

of vulcanized India rubber. The balls are driven by a cue or a mace, as they are respectively termed; the cue being by far the superior instrument of the two, requiring the greater skill in its use, and producing effects which can hardly be executed with the mace; the latter, indeed, is considered merely as the implement for novices or ladies, to whom it is particularly suited, since to execute finely with the cue sometimes requires the assumption of attitudes which are not becoming to female attire, or to the modesty of the sex. The cue is a straight, round staff of wood, from 4½ to 6 or 8 feet in length, tapering from a diameter of about 1½ inch at the butt to ½ of an inch at the tip, a diagonal slice being taken off one side of the butt, so as to give it an oblique plane surface, which can be laid flatly on the table for the purpose of pushing, when the ball is in such situations that it cannot be reached with the point; the point of the cue is tipped with thin leather, and is frequently chalked while playing, to cause it to take hold, without slipping, of the smooth and polished surface of the ball. The mace is a slender springy staff of some light elastic wood, slenderer and shorter than the cue, with a head of hard wood, fashioned something like a spoon, truncated at the end, and cut into a flat bevel at the under side, so as to allow it to lie flat on the table, with the handle rising from it at a tangent. The mace can only be used, like the butt of the cue, in pushing. In striking with the point, which is the true and scientific play, and the only play by which fine execution can be accomplished, the player grasps the cue firmly, but not rigidly, near the butt, with the full hand, and, standing with his left foot advanced next to the table, rests the cue at about 8 inches from the point on what is technically termed a bridge, formed by resting the wrist and ball of the left hand flatly on the table, as also the tips of the four fingers, somewhat expanded, with the knuckles elevated, and with the ball of the thumb placed against the forefinger midway between the knuckle and the first joint. Between this knuckle and the thumb, as on a *point d'appui*, the cue is made to play horizontally so as to strike the ball of the player with any degree of force and at any angle of its surface which is required, in order to cause it to assume certain lines of progression, before and after striking either the ball or the cushion at which it is aimed. The game consists in striking one of the other balls, at which the striker aims with his own ball, in such manner as to force that ball or those balls—for in different games various numbers of balls are used, in various combinations—into one of the pockets; or to force the striker's ball to ricochet from the 1st to the 2d and 8d ball, if it be in the 4 ball game, successively; or, in some cases, to force the striker's ball to ricochet from the ball stricken into one of the pockets—this point being in some games a losing, and in others a winning point. Billiards is a game

requiring a quick and sure eye, a steady hand, great delicacy of touch and flexibility of wrist, a quiet, easy, and patient temper, considerable power of mentally and instinctively calculating the angles at which a ball is deflected from a plain or convex surface, and the force required to effect the object; and lastly, immense practice, without which all the rest are nothing. Indeed, so constant are the attention and practice requisite to form a first-rate player, that none but men of leisure can hope to become such, and even with them it is time thrown away. The principal games played at billiards, are the English, or 8 ball; the American, or 4 ball game; the Russian, the Spanish, and the pool games; in all of which the principle is identical, though the combinations vary. Billiards is played more or less by all civilized nations, but is most popular with the Spaniards, Russians, and Americans.

BILLINGS, JOSEPH, an English navigator in the service of Russia, lived at the end of the 18th century. He accompanied Cook in his last voyage, and was intrusted with the astronomical department. In 1785, Catharine II. took him into her service, and sent him on a voyage of discovery. His instructions were, "to determine the latitude and longitude of the mouth of the Kolyma river; to describe the situation of the promontory of the Tchouktchees to Cape East; to trace an exact chart of the isles of the Pacific to the coast of America; in short, to complete the knowledge of the seas situated between Siberia and the continent of America." He set out overland in Oct. 1785, reached Kolyma, and put to sea in 1787. The expedition consisted of 2 vessels. It sailed toward the Arctic ocean, went 5 leagues beyond Cape Baranov-Kamen, and returned to the Kolyma, whose course they explored up to Yakootak, which they reached Oct. 22. At Okhotsk, on the Pacific coast, they built 2 ships for the American expedition. Billings started anew, Sept. 1789, lost 1 of his ships, and cast anchor at the port of Petropaulovski, where he wintered. In March, 1790, he set out to visit the islands on the south of Alaska, on the N. W. coast of America. On the 24th he saw the island of Amtchitka; on June 1, he landed at Oonalaska. Billings examined into the manners and ideas of these islanders, and determined the latitude of Oonalaska. On June 18, he left it, and traversed the islands of Oonemak and Sannagh. He reconnoitred the Shoomagin group, and then visited the group called Evdokeef. On the 27th he described the mountains of Kodiak, and 2 smaller islands. He cast anchor at Kodiak, and described it and its wild inhabitants. July 8, he touched at Afognak. On the 11th he touched at the Ladenaia-Reka, or Icy river, perpetually frozen. On the 19th he penetrated into Prince William's sound, and cast anchor where Cook had been in 1778. He examined Cook's strait thoroughly. His provisions now began to run short, and not having means to winter in these savage regions, he deter-

mined to return to Kamtchatka. Billings's voyage lasted from 1787 to 1791. An account of it was published in English, at London, in 1802.

BILLINGS, WILLIAM, the father of New England psalmody, born in Boston, Oct. 7, 1746, died there Sept. 26, 1800. He was by trade a tanner, and his opportunities of instruction in any branch of knowledge, and particularly in the theory and practice of music, were few. A love of music and considerable vocal skill, however, led him while still young to become a teacher of singing and a composer of psalm tunes, which eventually found their way into every church choir of New England, and became great favorites with the people. He published no less than 6 collections of tunes, which, with a few exceptions, were of his own composition. They were founded upon the new style of church music, then first introduced by Tansur, A. Williams, J. Arnold, and other English composers, and their contrast to the dismal old tunes previously in use naturally gave them immense popularity, and in fact caused a revolution in musical taste in New England. They were far from being perfect in the requisites of good melody and harmony, and their author, in a quaintly worded preface to his 2d work, entitled "The Singing Master's Assistant," and commonly known as "Billings's Best," apologizes for the errors which his first collection contains; but the melodies were generally good, and, had the composer enjoyed the advantages for musical instruction which the present age affords, his compositions would doubtless have possessed a permanent value. Billings was a firm patriot, and an intimate friend of Samuel Adams, who frequently sat with him at church in the singing choir. Many of his tunes, composed during the war of independence, breathe the true spirit of patriotism, and were sung and played wherever New England troops were stationed. Billings may fairly claim the title of the first American composer, for before his time there is no record of any musical composition by a native of this country.

BILLINGSGATE, the great fish-market of London. The quantity of fish that comes to this market is almost beyond belief. The "take" on the English, Scotch, Irish, and Dutch coasts, all finds a sale at Billingsgate, and is transported to London either by fishing boats or by railway, from the distant parts of the kingdom. The chief part of the fish consumption of England is supplied from Billingsgate, to which the article is first sent, as being certain of finding a sale at current prices. The market is under the control of a clerk and inspectors. The trade is conducted by salesmen, who are the agents between the wholesale dealers and the retailers; and the business is, as may be supposed, done at a very early hour, and with great rapidity. The congregation of a great number of individuals, all anxious for precedence, attentive and eager to secure their bargains, has given rise to fre-

quent altercations, seasoned with many personalities, and the use of much wit, more remarkable for readiness and pungency than for delicacy. Hence the term Billingsgate has been applied to abusive and vulgar language. In these days of refinement, the language or conduct of Billingsgate is not remarkably worse than that of any similar concourse.

BILLINGTON, ELIZABETH, an English singer, born 1769, died Aug. 25, 1818. She was the daughter of Weichsel, a German musician, and in childhood displayed such musical talent that she played her own composition in London, at the age of 11. She married her music-master, Mr. Billington, whom she accompanied to Dublin, where she made her first appearance on the stage. She remained there until 1786, when she returned to London, but meeting no success she went to Paris and took lessons from Sacchini, by whose advice she visited Italy in 1794, to perfect herself in her art. She lost her husband in Italy, and married a second time at Lyons. On her return to England in 1801, she charmed the musical world with her accomplishments, and was engaged and sang at both Covent Garden and Drury Lane theatres at the same time. Her husband left England in consequence of the alien act, and she followed him in 1817, and died at St. Artien near Venice.

BILLITON, an island of the Malay archipelago, separated by the Carimata passage from Borneo, and by Gaspar straits from Banca. Its highest peak, near N. E. point, which is 2,800 feet high, is in lat. $8^{\circ} 13' S.$, long. $108^{\circ} 7' E.$; area 1,944, and including 58 inconsiderable adjoining islets, 2,284 sq. m.; pop. of the island 8,000, of the islets 1,500. It is noted, like the neighboring island of Banca, which it resembles in geological formation, for its production of grain tin from alluvial deposits. Iron possessing strong magnetic properties, is found in abundance; and the peculiar white iron, called *pamor*, used in damasking the famous Bornean Dyak sword blades, is found here in small quantities, Billiton and Celebes being the only countries where it is found. Iron has been worked since an early period by the native Sikas; but the mining of tin did not commence till as late as 1850, by a Dutch company, of which Prince Frederic Henry, of Holland, is the chief stockholder. The island has been granted to the prince as a private property. It is the southern extremity of the great Malay tin district, which extends northward over 17° of latitude to Tenasserim, on the Malay peninsula. According to the various tests, by the crack of the metal, weight, and ductility, the tin of this island is the best in the world. The product thus far has not been made public; but the mines, in proportion to their extent, are said to be as productive as those of Banca. As in that island, Chinese colonies work the mines. The soil is generally sterile, and a large portion of the rice for the consumption of the miners is brought from Java and Bali. The aborigines, a

rude race, called Sikas, and much resembling the Bajaus or sea gypsies, subsist chiefly by fishing, and are accused of being ready to plunder a feebly manned trading prahu, or a stranded European vessel, whenever a favorable opportunity is presented.

BILLOM, a town of France, in the arrondissement of Clermont, department of Puy-de-Dôme, with 4,591 inhabitants. It is a town of considerable antiquity. Before the revolution it had a collegiate church, among the treasures of which were alleged to be a drop of the blood of Christ, and a piece of the wood of the true cross.

BILLS OF MORTALITY, the table of deaths occurring in a particular city or district. The London bills of mortality commenced in 1598, after a visitation of the plague, and were extended into weekly bills after a similar visitation in 1603. They were compiled from the returns of parish clerks, and long after considerable progress had been made in the system of preparing mortuary tables on the continent, they continued in a most unsatisfactory and unscientific condition. The establishment of a metropolitan police district, introduced the office and functions of the registrar-general. A new system of registering births, deaths, and marriages, was inaugurated in England and Wales, in 1839. The bills of mortality were abolished as such, and new metropolitan registration districts established.

BILMA, a town in the desert of Sahara, situated between 18° and 19° N. lat. and about 14° E. long., S. S. E. from Moorzook, N. N. E. from Bornoo. It stands in the centre of the oasis Wady Kaway, and on the route between Tripoli and Bornoo. It is inhabited by Tibboos, among whom are many negroes, whose northernmost limit of habitation this is. It owes its importance to being a stopping-place for caravans, and still more to the salt lakes in the neighborhood. The salt is gathered at the end of the dry season, when it is taken in sheets from the borders of the lake. It is then put into bags, and exported to Soodan and Bornoo. A coarser sort is made up in pillar form, quite hard, and also sent to Soodan. Dates are to be had here in abundance, but very little of other sorts of provisions.

BILSON, THOMAS, bishop of Winchester, born in Winchester in 1586, died at Westminster, June 18, 1616. He was one of the most learned men of his time. In 1596 he was consecrated bishop of Worcester, and the following year became bishop of Winchester, and was sworn of the privy council. Bilson published "The true Difference between Christian Subjection and Unchristian Rebellion," 4to, Oxford, 1585, and 8vo, London, 1586; "The Perpetual Government of Christ's Church," 4to, black letter, London, 1593; "The Effect of certain Sermons touching the full Redemption of Mankind by the Death and Blood of Christ," &c., 4to., London, 1599; "The Survey of Christ's Suffering for Man's Re-

demption, and of His Descent to Hades or Hell," fol., London, 1604. Bilson was held in the highest respect for his personal qualities, as well as for his great learning.

BILSTON, a market town of Staffordshire, England; pop. in 1851, 28,527. It is the centre of extensive coal mines, and of a large iron trade, the founderies being engaged in every kind of iron work. In the vicinity is a coal mine which has been on fire for 60 years. The sanitary arrangements are very defective, and the town is memorable for the dreadful severity with which the cholera attacked the population in 1832.

BIMA, the principal state of the island of Sumbawa, and seat of a Dutch residency. The Dutch fort at the head of the bay of Bima in lat. 8° 35' S., long. 118° 40' E. Before the eruption of the mountain Tomboro, situated at the extremity of the northern peninsula of the island, and which is the most terrific volcanic eruption on record, the inhabitants of Bima numbered 90,000 souls; and when a census was taken in 1847 there were only 45,000. The soil of this territory has not been found favorably adapted to the production of cereals, or other products for the sustenance of man. The surface of the land consists of a great number of trachytic ridges, which are separated by ravines often very deep, and of which the sides are frequently perpendicular; much resembling the almost fathomless clefts and fissures in the arid wastes of portions of the Tierras Calientes in Mexico. In these ravines run streams very impetuous in the rainy season, while their beds are nearly empty in the dry. The country is well situated for irrigation, and water is abundant for the purpose, which if applied as in the neighboring islands of Bali and Lombok, would evidently result in the same remarkable productiveness of soil; but the inhabitants of Bima are too feeble in character and too badly governed, to be induced to give such an intelligent direction to their labor. The chief productions which have attracted Europeans to this portion of Sumbawa are sandal, and aspan wood; and beeswax and horses are exported to Java. The horses of Bima are much esteemed in the Indian islands; they are not so large as those of Celebes, nor so hardy and useful as those of the Bashee islands; nor so sure-footed as the little ponies of Java, but in point of beauty and spirit, they are justly called the "Arab of the archipelago;" yet are considered inferior in blood to the Bedouin "coursers of the desert," not having his fine coat and head. The horse is only used for the saddle, and never by the natives for draught, in the plough, or wheeled carriages; and the mare only is used as a beast of burden. A fine Bima horse is worth \$50 in Batavia; but very good ponies of this breed can be purchased for \$10; and they are procured by Javanese traders from those who raise them, for half that amount in articles of trade. There are 2 other breeds of horses on the island; those of Tambora, and Gunung-Api, differing

essentially from those of Bima. The inhabitants of this territory speak a language which has been regarded by Crawford, Raffles, and other historians of the Indian islands, as distinct from the Malay or any other language of the archipelago. In the appendix to "Raffles' History of Java," a list of 46 Bima words, names of prominent objects in nature, of which 2 only are said to originate from the Malay, are adduced in proof of the entire originality of the Bima language; but an application of that rule, the interchangeability of consonants of one class, and transposition of vowels and syllables, which the growth of language seems to have generally observed, will show that nearly all of the words in Raffles' vocabulary are of Malay origin. Thus we find *dho*, man, sir, readily traceable to *dau*, in Flores, *tawu*, in Celebes, and to the *tuau* of the Malays. Again, *oi* water, apparently differing so much from the Malay, *ayar*; yet we can trace it to that source. in *ai* in Lombok, *wai* and *we* in Celebes, *er* in Java; and *auar* and *way* in many portions of Sumatra. *Dana* is certainly derived from the Malay *tanah*, earth; *cavi* from *babi*, hog; *dolu* and *telu*, from *teloor*, egg; *wadu* from *batu*, stone; and even *intara* from *bintang*, star; and *wot*, and *wigi*, from *gigi*, the teeth. There exists among the records of this people, relics of an ancient language, like the Kawi of Java, or the Sanscrit. The alphabet of this recondite language of Sumbawa is as follows: a, ch, ph, n, s, r, t, th, b, l, gh, j, p, d, w, m, ch, dh, bh, k, ng, rk, dh, kh, bh, z, y, d, f, g, gn. There are 30 consonants, consisting of 7 labials, 4 dentals, 4 palatals, 4 gutturals, 4 nasals, 6 liquids, and 2 sibilants. The letters f and z are regarded by Dutch and English writers as a peculiarity not to be found in the language of any other people of the archipelago; but they have certainly overlooked the fact that the people of the island of Nias substitute f for p, like the Arabs, calling *pulo*, island, *fulo*; and the people of Timor have the f sound, as *fahi*, hog, from the Malay *babi*.—The Dutch fort of Bima is garrisoned by about 150 Javanese and Bughis troops and a dozen Europeans. There are not less than 6,000 Bughis settlers in the territory, probably 1,500 from Bali, 1,000 from Timor and Flores, and 20 Chinese traders.

BIMBIA, a river of western Africa, discharging its waters into the bight of Biafra. Numerous villages are built along its banks, governed by a chief under British protection.

BINAB, a town of Persia, province of Azerbaidjan, on the Sofi Chai, a stream which enters Lake Ooroomesyah from the westward; pop. 7,500. The streets are clean, the caravansaries good, and the town well supplied with water. Fruit is raised in the vicinity in great quantities.

BINARY ARITHMETIC, an invention of Leibnitz, for discovering the properties of numbers, and constructing arithmetical tables. Only one digit, 1, is used, and its removal one place to the left doubles its value. Thus, 1 sig-

nifies one; 10, two; 11, three; 100, four; 101, five; 110, six; 10,000, sixteen, &c.

BINARY STARS are those couples of stars which are observed to be revolving about each other.

BINBIR-KILISSEH, some ruins of ancient tombs in the pashalic of Karamania, Asia Minor, 20 miles N. N. W. of Karaman, supposed to occupy the site of Lystra, where the cripple was healed by Paul.

BINDRABUND, a town in Hindostan, pop. 19,776, under British dominion, on the W. bank of the river Jumna, about 85 miles N. N. W. from Agra. The Hindoos regard Bindrabund with much veneration, as the residence of the god Krishna during his youth. The old name of the town was Vrindavana (a grove of trees). Many pilgrims come hither to be cleansed from their sins in the sacred waters of the river. The town contains many temples, all dedicated to Krishna.

BINFIELD, a parish of Berkshire, England, the residence of the father of Alexander Pope. A tree is still standing, beneath which his "Windsor Forest" is said to have been composed.

BINGEN, a German town, pop. 5,100, in the grand duchy of Hesse-Darmstadt, opposite Rüdesheim, on the left bank of the Rhine, at the confluence of this river with the little river Nahe. A famous wine is produced upon the neighboring Scarlet or Scharlach mountain, and enjoys, under the name of Scharlachberger, a world-wide reputation. The approach to Bingen is attended with some difficulty for navigation by the so-called Bingerloch, or Bingen-hole, formed by a compression of the Rhine into a narrow strait, between towering rocks. High above them all soars the Mäuseturm, or the mice-tower, so called from the popular belief that Archbishop Hatto of Mentz, who used it as a granary for speculative purposes during times of famine, was gnawed to death there by mice in 969. According to another tradition, the original name of the tower was Mauththurm, or custom-house tower. This tower was in a very dilapidated condition until 1856, when it was restored. The picturesque aspect of Bingen is enhanced by the adjoining Rupertsberg, with the ruins of a convent, where St. Hildegard, of Sponheim, took up her abode in the 12th century. The Rochusberg forms an additional attraction. Upon its summit stands a chapel, which is annually visited by crowds of pilgrims. A picture of St. Rochus was presented to the chapel by Goethe. The same mountain exhibits the ruins of an ancient castle, where, in 1105, the German emperor, Henry IV., was imprisoned by his son. In the time of the Romans, Bingen was called *Vincum* or *Bingum*, and formed part of Belgian Gaul. The castle built by the Romans upon the Rochusberg bore, in the middle ages, the name of Klopp castle. The name of its principal tower is Drususthurm. Hence the name of Drususbrücke applied to the beautiful bridge over the river Nahe. The Ni-

belungenhort, or the treasure of King Nibelung, which gave the name to the celebrated German epic, known as the *Nibelungenlied*, was, according to tradition, sunk in the Rhine, not far from Bingen.

BINGHAM, SIR GEORGE RIDOUT, a British general, born 1777, died Jan. 3, 1838. He entered the army in 1793, and progressively advanced in different regiments, until he became lieutenant-colonel of the 53d regiment. He served through the peninsular war, and was knighted in 1815; he married in the preceding year. Sir George Bingham had charge of Napoleon Bonaparte on the way from England to St. Helena, where he remained several years, and was promoted to the rank of major-general, and colonel-commandant of the 2d rifle brigade. He appears to have conducted himself courteously toward the exile of St. Helena, who described him as "a well-disposed man," but so afraid of the governor (Sir Hudson Lowe) that he would not visit at Longwood, for fear of giving offence to his excellency. Napoleon said that "Lady Bingham could not speak French, but looked good-natured."

BINGHAM, JOSEPH, an English scholar and divine, born at Wakefield, Yorkshire, Sept. 1668, died Aug. 17, 1723. An unfortunate controversy, in which he took a prominent part, forced him to resign his fellowship at Oxford; he was, however, presented to the rectory of Headbourn-Worthy, in Hampshire. He soon after married, and his increased expenses forcing him to exert his abilities to enlarge his income, he published, in 1708, the 1st volume of "Origines Ecclesiasticae, or Antiquities of the Christian Church," which he completed in 10 vols. 8vo, in 1722. In 1712 he was presented to the rectory of Havant, near Portsmouth. In 1720 he was one of the many that were ruined by the South sea bubble.

BINGHAMTON, the shire town of Broome co. N. Y.; pop. in 1855, 8,818; situated at the junction of the Chenango and Susquehanna rivers, where the former is crossed by the New York and Erie railroad, 225 miles from New York, and 80 miles from Syracuse, with which city it is also connected by railroad. The Chenango canal also connects it with Utica. It is handsomely laid out, and is a prosperous and active place, containing, according to the census of 1855, 18 churches, about 50 stores, 6 newspaper offices, 2 banks, seminaries, &c., appropriate to its population. Water-power is furnished by the Chenango river, and the flour and lumber trade is extensively carried on. It was settled in 1787 by William Bingham of Philadelphia. Since the census of 1855, the whole town of Chenango, of which the village originally formed a part, has been included within the limits of Binghamton.

BINGLEY, the Garrick of the Dutch stage, born at Rotterdam in 1755, died at the Hague in 1818. An early passion for the drama caused him to abandon the commercial pursuits for which he was intended by his father. For

nearly 40 years he was at the head of his profession in Holland, excelling chiefly in tragedy, but performing also occasionally in comic parts. From 1796 to the time of his death he was the director of a theatre, and at the same time the principal attraction of his company, which performed chiefly at Rotterdam and the Hague.

BINGLEY, WILLIAM O., an English essayist and miscellaneous writer, was born in York, and died in London, March 11, 1823. Originally intended for the bar, he deserted it for the church. He wrote "Travels in Wales in 1798," the "Economy of the Animal Creation," which has been translated into French and German, the "Economy of a Christian Life," "Memoirs of British Quadrupeds," a "Dictionary of Musical Composers of the three last Centuries." He was a laborious and painstaking compiler.

BINGTANG, an island of the Rhio-Linga group, in the Malay archipelago. Mt. Bingtang, its highest peak, 1,368 ft. high, is in N. lat. 1° 4', E. long. 104° 28'. Rhio, the Dutch free port, is in lat. 54' 40" N., long. 124° 26' 30" E. Area of the island, 408 sq. m.; pop. with Rhio, situated on Tanjong Pinang, an adjoining islet, 15,000. The geological formation is granite, overlaid by cellular clay ironstone. Iron and tin are found, but not as yet extensively mined. The gambier plant (*uncaria gambier*), which produces terra japonica, is the chief product of the island. A large number of gambier plantations are cultivated by Chinese colonists, who cultivate black pepper at the same time; the refuse leaves of the gambier, after obtaining the coagulated decoction of commerce, being excellent manure for the latter plant. No less than 7,300 tons of gambier were exported in 1857 from Singapore; chiefly the product of Bingtang, Singapore, Batang, and neighboring islets of the group. This article is worth in the European markets of the archipelago from \$2 50 to \$3 the picul (133 lbs.) Other productions are cocoa-palm, durian fruit, much prized by the natives, caoutchouc, gutta percha, and damar. Many valuable timber trees are found on the island. The native Malays, who are rude hunters and fishermen, like the *Orang Benua* of the Malay peninsula, are now outnumbered by the enterprising Chinese. The island is subject to the sultan of Johore, on the peninsula. The native chief is the descendant of a prince driven from Malacca by the Portuguese in 1511. Much mention is made of Bintão, as it is called in Portuguese chronicles, by Barros, Canto, and Castañeda.

BINNACLE, formerly, even in Dr. Johnson's time, spelled Bittacle, probably a corruption of the French *boite d'aiguille*, needle-box, a case or box in which the compass and lights are kept on board ship. It is sometimes divided into 8 compartments, the 2 sides containing a compass, and the middle division a lamp. In order that the needle may not be affected, the binnacle is put together without nails or any iron work. On board iron steamers, it is an object of the first importance to

the safety of the ship to isolate the binnacle as completely as possible.

BINNEY, Amos, a patron of art and natural science, and a successful cultivator of the latter, born in Boston, Mass., Oct. 18, 1808, died in Rome, Feb. 18, 1847. He graduated at Brown university in 1821, and took the degree of M. D. in 1826. His health forbade the practice of his profession, and he engaged in mercantile pursuits with much success. In the midst of business, however, he never abandoned his early love for natural science, and to it he devoted all his leisure moments. Mineralogy and conchology more especially engaged his attention, though he explored in a general way the whole field of geology and zoology. He was one of the founders and most efficient members of the Boston society of natural history, and its president, 1843-'47. He accumulated the best private collection of works on natural history then in the country, which he opened freely to all naturalists; and indeed a resort to his library at one period was absolutely essential to the proper investigation of any important subject in zoology. He was elected a member of all the scientific societies in the country, and was active in the formation and promotion of the American association of geologists and naturalists. The 1st volume of its transactions was published at his instance, and mostly at his own expense, and was extensively and gratuitously distributed by him. He was the president elect of that body at his death. When a member of the state legislature he used his influence to sustain the geological survey of the state, and succeeded in having attached to it a commission for the zoological and botanical survey also, which resulted in the important volumes of Harris on insects injurious to vegetation, Emerson on forest trees, Storer on fishes, Gould on invertebrata, &c. He was a zealous patron of art as well as of science, and for the encouragement of American artists, had commissioned 8 or 10 of the principal painters and sculptors to execute works for him on subjects chiefly American, to be chosen by themselves, and without limit as to price. Several of these, as the *Noche Triste*, by Rothermel, "Storming of a Mexican Teocalli," by Leutze; "I Think," by Terry; "Catharine Parr," by Huntington, were completed. Having accumulated what he regarded as a competency to pursue his favorite subjects, it was his intention to devote the remainder of his life to the patronage of science and art. Being in impaired health, he proceeded to Europe for the purpose of invigoration, increasing his acquaintance, and acquiring other facilities for the furtherance of his objects. He died, however, at Rome, at the age of 44. His monument, by Crawford, is one of the principal objects of interest at Mount Auburn. He wrote many valuable papers on natural history, which appeared in the proceedings and the journal of the Boston society of natural history. But the subject which he selected for his special investi-

gation was the terrestrial mollusks of the United States, and their shells. He devoted many years to this subject, and beside his own extensive personal observations he interested others all over the union, and fitted out several expeditions to Florida, Texas, and other unexplored regions, to collect materials. He employed the best artists to delineate and engrave figures, intending to publish a work that should be unsurpassed artistically, and make it a gratuitous contribution to science. Just on the eve of publication he died, leaving directions, however, that it should be completed, and gratuitously distributed to scientific bodies and men of science interested in the subject. This was done by his friend Dr. Augustus A. Gould, of Boston. The work consists of 2 octavo volumes of text and a third of plates, and for fidelity and beauty will vie with any work of the kind that has been published in any country.

BINNEY, HORACE, a distinguished lawyer of Philadelphia, was born about 1780, and through a long and active life has identified himself with the best interests of that city. He was for many years director in the first bank of the United States, and acted as trustee in the arduous duty of winding up the affairs of that institution. He took no prominent part in national politics until the election of General Jackson; but he then came forward in opposition to that administration, and was elected to congress. In that body he immediately obtained a commanding position. Since his retirement from political life his most celebrated effort was the defending of the city of Philadelphia in the Supreme Court against the suit brought by the heirs of Stephen Girard. He stands at the head of his profession in Philadelphia.

BINOMIAL, the sum or difference of 2 quantities algebraically written, as $a \pm b$, or $m \pm n$. The binomial theorem of Newton is a formula by which we can instantaneously write down any power or root of a binomial without the labor of actual multiplication or extraction.

BINONDO, a native town near Manila, on the right bank of the Pasig; or, rather, it is now a suburb of the walled European city, having been annexed to it by a magnificent stone bridge, 411 feet in length. The bridge of Binondo is regarded as the most remarkable structure ever erected by Europeans in the Indian archipelago.

BINTULU, the name of a river and territory in the sultanate of Brunai, in Borneo. Mouth of the river, lat. $8^{\circ} 18' 30''$ N., long. $118^{\circ} 8' 15''$ E. It is one of the 21 large streams whose mouths can be observed in running down the N. W. coast of Borneo, from Cape Sampanmanjio to Cape Datu, but of which the course of not one is yet laid down in any published map. Since the establishment of Rajah Brooke on this coast, in Sarawak, Bintulu, along with several others of these Bornean N. W. water-courses, has been partially explored. Coal, of the same quality as obtained in Labuan, and in Banjar-massin, has been seen cropping out in many

places near the banks of the river. Iron and antimony ore have been found in many parts, and supposed to be fully as abundant as in Sarawak. The present exports are native camphor, beeswax, wood-oil, damar, agila, and goliga, or the bezoar stones, taken from the stomachs of monkeys, which products are brought to points on the river banks by the wild Dayaks of the interior, and exchanged with Malay traders for cloths and ornaments. No Europeans have yet attempted to develop the mining resources of the country. The Bintulu territory has no determinable area, being simply that portion of country immediately bordering on the river. The bar of the river has not more than 12 feet on it at high water, but, for vessels of this draught, it is navigable about 45 miles. The territory is thinly peopled by a few Dyak tribes.

BIOBIO, or **BROBBIO**, the largest river in Chili, which divides Chili proper from the territory of the Araucanian Indians. It springs in the Andes from the volcano Tucapel, and flows into the Pacific. The Laxa runs into it on the right, the Vergara on the left. It is not navigable for any distance on account of its many reefs, rapids, snags, and other dangers. Its total course is about 200 miles.

BIOERNSTAEHL, **JAKOB JONAS**, a Swedish traveller, born at Rotarbo, in the former province of Södermannland, in 1781, died at Salonica in 1779. He was a graduate of Upsal, and a tutor in the family of a Swedish nobleman, with whose children he made the tour of Europe. Having studied the oriental languages at Paris, and published a work on the Hebrew decalogue, illustrated according to the Arabic dialect, he was made professor at the university of Lund, and sent by Gustavus III. on a scientific journey to the East, in the course of which he died of the plague at Salonica. An account of his travels appeared at Stockholm, in 1778, in 8 volumes, containing, among other things, anecdotes relating to Voltaire, whom he had visited at Fernay.

BIOGRAPHY (Gr. *βίος*, life, and *γραφω*, to describe), an account of the life and character of an individual. It differs from history, properly so called, in considering public and national events, if at all, only in their relations to a single personage. It assumes various forms, being sometimes most interested in the circumstances and external career, the *curriculum vitæ*, of its subject; sometimes regarding chiefly intellectual and moral qualities and development; sometimes being hardly more than a catalogue of a man's positions and changes of position; and sometimes, like the autobiography of Goethe, fit to be entitled truth and poetry; sometimes being formally narrative throughout, but often presenting the hero also by his letters and notes of his conversation. A biography may be a panegyric or a diatribe, or the life of a man may be used as only a frame on which to attach moral reflections. Its true aim, however, is to reveal the personal significance of

those men who have played a distinguished part in the world, either by action or by thought. History has reference to the development of principles, biography to that of character. To observe the growth of a nation, or of any institution from the idea on which it was grounded, through its vicissitudes and conflicts, is the part of history. To trace a human life, to remark the manifold efforts, defeats, triumphs, perplexities, attainments, sorrows, and joys which fill the space between the cradle and the grave, is the province of biography. In history, Scipio at the head of the Roman legions subdued Africa, and Agesilaus struggled against the misfortunes of his country; in biography, the former is seen not only gaining victories, but also gathering cockle-shells on the shore, and the latter not only fighting after defeat, but also riding on a hobby-horse among his children. Plutarch says it does not follow because an action is great, that it therefore manifests the greatness and virtue of him who did it; but on the contrary, sometimes a word or a casual jest betrays a man more to our knowledge of him than a battle fought wherein 10,000 men were slain, or sacking of cities, or a course of victories. Xenophon remarks that the sayings of great men in their familiar discourses, and amid their wine, have somewhat in them which is worthy to be transmitted to posterity. As a branch of literature, biography seems to be nearly coeval with history itself. Some of the narratives of the Old Testament, those of Ruth and Joseph for instance, are biographies. The Odyssey of Homer is a biography of Ulysses, as the Iliad is a history of the Trojan war. Biographies were infrequent under the Greek and Roman civilization, when the individual was absorbed in the state. When Cincinnatus or Coriolanus is mentioned, we recall rather an act than a person. The elder Cato wrote a history of the Roman republic, in which there was not found a single proper name. He said simply: "The consul proposed such a law, the general gained such a battle." The chief of the ancient biographies are the lives of the Cæsars, by Suetonius; of the philosophers, by Diogenes Laertius; of the sophists and also of Apollonius of Tyana, by Philostratus; of the philosophers and sophists, by Eusebius; of great commanders, by Cornelius Nepos; of those illustrious for their learning, by Hesychius of Miletus; of Alexander the Great, by Quintus Curtius; of the emperors and illustrious Romans, by Aurelius Victor, also attributed to Pliny the Younger; and, above all others, the parallel lives of the greatest Greeks and Romans by Plutarch, and the life of Agricola by Tacitus. The *Cyropædia* of Xenophon is rather a political romance than a biography of Cyrus the Great, and the memoirs of Socrates by the same author were designed only as a defence of Socrates by presenting some of his teachings. Philosophers and military statesmen fill the list of the subjects of ancient biography, and their lives, with rarely an exception, do not exceed the ordinary length

of a review article at the present time.—The middle ages seldom made warriors or statesmen the subjects of biography, but were rich in biographical accounts of saints and religious heroes. Martyrologies bearing the name of *acta sanctorum*, *acta martyrum*, and *passiones martyrum*, became common, each church and monastery preserving an account of its own martyrs, all of which were subsequently gathered into vast collections. Dionysius of Alexandria wrote a history of the martyrs in that city; Cyprian, in his letters, gave an affecting account of the martyrs and confessors in the neighborhood of Carthage; Eusebius wrote a book on the martyrs of Palestine; Simeon Metaphrastes wrote lives of the saints, 122 of which yet remain; Prudentius wrote on the crowns and passions of martyrs; John Moschus wrote lives of the monks to the time of Heraclius, and several works of Gregory of Tours are biographies of men distinguished in the church. The earliest collections of these martyrologies were circulated under the names of Jerome and Bede. In the 13th century, a collection was made by Jacob à Voragine, and in the 14th, by Peter à Natalibus; but the most complete and elaborate works on this subject bear date since the revival of letters. All other lives of the saints have been thrown into the shade by the colossal undertaking of the learned Jesuits of Antwerp, under Dr. Bolland, assisted by the combined industry of the order, and by communications from all parts of Europe. The work was begun in 1643, embraces *acta sanctorum*, *quotquot toto orbe coluntur*, and extends to 57 volumes, but is not yet completed. Individual religious orders, in recording the lives of their own saints, have rivalled the erudition and industry of the Bollandists. Thus Mabillon is the biographer of the Benedictine order, Henriquez of the Oistericians, Monstier of the Franciscans, Siccum of the Dominicans, Van der Sterre of the Premonstransians, and Alegre of the Carmelites, whose work is entitled *Paradisus Carmeliticus Decoris*. Other biographical works on this subject are the lives of the saints by Baillet, Alban Butler, and Ulich, lives of the fathers of the desert by Arnaud d'Andilly, the *Anglia Sacra* of Wharton, John Fox's "Book of Martyrs," and the *Flos Sanctorum, historia general de la vida y hechos de Jesu Christo y de todos los Santos de que reza la iglesia Catolica*, by Villegas, published at Toledo, in 1591.—Since the revival of letters there have been few eminent persons whose biography has not been written, and hardly an eminent author who has not written biographies. An immense mass of literature, valuable sometimes chiefly for the materials furnished, at others more for the art and quality of the writer, is embraced under the French titles *Vies*, *Notices*, *Biographies*, *Mémoires*, *Eloges*, the German *Leben*, *Lebensbeschreibungen*, *Nekrologe*, *Ehrensäulen*, and the English "Lives," "Memoirs," "Biographies," "Biographical Notices," and "Biographical Dictionaries." Among the chief writers of individual in distinction from collective biographies are

Fléchier, Fontenelle, Marzeaux, L. Racine, Buirgny, De Sade, Voltaire, Boissay d'Anglas, Villemain; Jerusalem, Schröckh, Nicolai, Herder, Sturtz, Hirzel, Klein, Garve, Meissner, Niemeier, Heeren, Dippold, Luden, Varnhagen von Ense, Tiedge, Barthold, Pertz, Perthes; Warburton, Middleton, Boswell, Murphy, Robertson, Monk, Roscoe, Th. Moore, Sir Walter Scott, Southey, Lockhart, Talfourd, Carlyle, Lewes; Marshall, Sparks, Irving, Tuckerman, and many others. Of special value and interest are Fléchier's life of Theodosius the Great; Fontenelle's lives of the Academicians; Buirgny's lives of Grotius, Erasmus, Bossuet, and Duperron; the life of Petrarch by De Sade, a descendant of his Laura; the life of his father, the tragic poet, by L. Racine; of Descartes, by Baillet; of Voltaire, by Condorcet; of Fénelon and Bossuet, by Bausset; of La Fontaine and Madame de Sévigné, by Walckenaer; of Molière and Corneille, by Taschereau; of Kleist, Moser, Engel, and Teller, by Nicolai; of Ruhnken, by Wittenbach, and of Wittenbach, by Mahne; of Heyne, by Heeren; of the preacher Reinhard, by Poelitz; of Charlotte Dorothea, duchess of Courland, by Tiedge; of Seydlitz, Winterfeldt, Schwerin, Keith, Bulow, and Sophie Charlotte, queen of Prussia, by Varnhagen von Ense; of Cicero, by Middleton; the remarkable life of Dr. Johnson, by Boswell, written with the minuteness and fidelity of a mediæval chronicler, and rendering the subject of it better known to posterity than any other man in history; the life of Lorenzo de' Medici and of Leo X., by Roscoe; of Nelson and Wesley, by Southey; of Schiller, by Carlyle; the excellent biography of Franklin, by Sparks; of Christopher Columbus, by Washington Irving; and of Washington, by Marshall, Sparks, and Irving.—Biographies embrace often both the life and times of the subject, linking personal with political, ecclesiastical, or literary history. Such a method is necessary in the lives of kings, and, to a large extent, of statesmen. Other examples of such attempts are Jortin's life of Erasmus, Godwin's life of Chaucer, McCrie's life of Knox, and Villemain's work, entitled "Lascaris, or the Greeks of the 15th Century." Voltaire's history of the ages of Louis XIV. and Louis XV. contains biographical notices not only of the courtiers and politicians of those periods, but also of the writers, painters, musicians, and sculptors. Biography enters largely into the fuller histories of philosophy and literature. Thus in Hegel's history of philosophy, his own system furnishes the framework into which he sets in order all the philosophical thinkers of the world, and Villemain's history of the mediæval and later literature, is at the same time a biography and characterization of writers.—Perhaps the most interesting of modern biographies are the lives of literary men, presenting as they do the strongest peculiarities, highest qualities, and greatest sensitiveness of character. Admirable specimens of this kind are the lives of Sheridan and Byron by Moore, of Sir Walter Scott by

Lockhart, of Charles Lamb by Talfourd, of Sir James Mackintosh by his son, and of Francis Horner by his brother. The memoirs of Sydney Smith by his daughter are entertaining, and the genius and sufferings of Charlotte Brontë and her sisters make their story, as related by Mrs. Gaskell, of terrible interest. The life of Dr. Channing by his nephew, Wm. H. Channing, and of Margaret Fuller, by R. W. Emerson, W. H. Channing, and J. F. Clarke, are valuable contributions to American biography.—Collective biographies embrace the lives of the eminent persons of a particular period, as the present time, the middle ages, or antiquity, or of a particular country; or of a particular department, as the sciences, the arts, religion, politics, war, literature. France has produced the largest number of these works, especially during and subsequent to the era of the revolution. History, surcharged with facts, is obliged to sum them up, as it were, in a table of contents, and one way of doing this is to represent ideas and events under the formulas of the names of men. In a disorganized age cyclopædic systems were needed as a sort of artifice to bring into juxtaposition the elements of history which could not be compounded in any other way. Among these collections are the lives of famous men by Petrarch, Boissard, Perrault, and D'Auigny; of the popes from Peter to Nicholas I., by Anastasius, surnamed the "Librarian," who lived in the 9th century, whose work was revised and brought down by Platina to 1471, and by Passerinus to 1566; Bowyer's history of the popes, 1748-'54; Walsh's compendious history of the popes from the foundation of the see of Rome to the time of the author, Leipsic, 1760; Ranke's history of the popes in the 16th and 17th centuries; a general history of ecclesiastical and sacred authors, by Cellier, in 25 volumes, and by Ellies du Pin, in 61 volumes; of "Protestant France," published by Haag; of the fathers of the church, preachers, and heretics, by Pinchinat and Pluquet; of the old French mineralogists, by Gobet; of great captains, by Brantôme and Chasteauneuf; of celebrated sailors, by Richer; of celebrated children, by Baillet and Fréville; of illustrious royal favorites, by Dupuy; of celebrated women, by Boccazio, Rivisius, Lemoyne, Mlle. De Kéralio, and Madame Fortunée Briquet; of female philosophers, by Ménage; of women of gallantry, by Brantôme; parallel lives of some illustrious women, by Holberg; the women of the French revolution, by Michellet; of celebrated female sovereigns, and of the beauties of the court of Charles II., by Mrs. Jameson; of the queens of England and Scotland, by Miss Strickland; the female biographical dictionary, by Mrs. Sarah J. Hale; lives of the philosophers, by the venerable doctor Walter Burley, by Fénélon, Savérien, and Maigeon; of Greek poets, by Lefèvre; of Greek and Latin poets, by Voss, Fabricius, and Lanteiras; the dictionary of Greek and Roman biography and mythology, by William Smith; the lives of useful men, by the society Monthyon; of the

Provençal poets, by Jehan de Nostre Dame; of the troubadours, by Fauchet, La Ourne de Sainte Palaye, and Millot; of romancers and dramatic authors, by Parfait, De la Vallière, and Laborde; of musicians, by Laborde, Choron, Fayolle, Gerber, and Moore; of artists, by Fontenay and Füssli; of painters, by Vasari, Bellori, Orlandi, Pilkington, Houbraken, Felibien, Deschamps, De Piles, D'Argenville, La Ferté, Quillet, Zea Bermudez, Palomino, and Velasco; of eminent British painters, sculptors, and architects, by Allan Cunningham; of American painters, of the sculptor Greenough, and numerous biographical essays, by Henry T. Tuckerman; of engravers, by Gori, Basan, and Walpole; of architects, by Milizia, Pingoron, and D'Argenville; the dictionary of painters, engravers, sculptors, and architects, by Spooner; of men illustrious in the republic of letters, by Nicéron, in 42 volumes, Paris, 1729-'45; of French poets, by Goujet, Sautreau de Marsi, Auguis, and Crapelet; of "learned Germany," by Meusel, continued by Ersch and Lindner, in 28 volumes, Lemgo, 1796-1884; a lexicon of German authors who died between 1750 and 1800, by Meusel, in 15 volumes, Leipsic, 1802-'16; lives of German poetesses, by Voss; of German female writers, by Schindel; of distinguished Germans, by Voigt, Weimar, 1824; lives of the remarkable men of the last 3 centuries, in 8 volumes, printed at Halle, 1802-'9; the German temple of honor, by Hennings, in 9 volumes, Gotha, 1809-'27; the theatre of men illustrious for learning, by Paul Freher, Nuremberg, 1688; the history of the world in biographies, by Böttiger, Berlin, begun in 1839; Schlichtegroll's obituary of the Germans, Weimar, 1808-'22, in 20 volumes, subsequently continued to the present time; the dictionary of mathematicians, astronomers, natural philosophers, chemists, mineralogists, and geologists of all peoples and times, designed to serve as a history of the exact sciences, by Poggendorff, Leipsic, 1858, of which only the first volume has yet appeared; of Hebrew and Arabic authors, by Rossi; of the Turkish poets, by Hassan Tcheleby; of Mexican biography, by Eguia; of Brazilian biography, by Pereira da Sylva; of the Scalds, or ancient poets of Scandinavia, by Graberg de Hemso; of the writers of the Baltic provinces, Courland, Livonia, and Esthonia, by Recke and Napiersky; of "illustrious Europe," by Du Radier; the *Biografiskt lexicon öfver namakunnige Svenskarnä*, Upsal, 1835; Erslew's *Almindeligt forfatterlexicon for Danmark*, Copenhagen, 1845-'48; of illustrious Italians, by Tipaldo, Venice, 1843-'45, also by Mazzuchelli and Fabroni; of celebrated Spaniards, by Antonio, De Castro, Ximenes, and Quintana; of the distinguished Portuguese, by Machado; and Dutch and Belgians, by Foppens, Paequo, and Burmann; the library of American biography, conducted by Jared Sparks; the medical biography by 60 physicians, Paris, 1820; dictionary of writers on medicine, by

Callisen, in 32 volumes, Copenhagen, 1829-'44; Dion's biographies of physicians; Thacher's American medical biography; lives of learned men, by Melchior Adam, 1705; lives and characters of the English dramatic poets, by Gerard Langbaine, London, 1698; *Biographia Dramatica*, by D. E. Baker, 1764; *Commentarii de Scriptoribus Britannicis*, by John Leland; *De Academicis et illustribus Angliæ Scriptoribus*, by John Pitts; *De Scriptoribus Hibernicis*, by Sir James Ware; Ward's lives of the professors of Gresham college; Wood's *Athenæ Oxonienses*, or account of the writers educated at Oxford; the worthies of England, by Thomas Fuller; Walton's lives of Donne, Herbert, and Hooker; the lives of the English poets, by Dr. Johnson; of the statesmen, men of letters and science of the reign of George III., by Lord Brougham; Lord Campbell's lives of the chief justices of England; the *Biographia Britannica*, London, 1747-'66 (2d enlarged edition, carried only to the 5th volume, 1778-'98); a biographical dictionary of eminent Scotsmen, by Robert Chambers, in 4 volumes, increased to 5 volumes in the last edition, 1856; Gilfillan's Scottish martyrs, heroes, and bards; Sprague's annals of the American pulpit; Wordsworth's ecclesiastical biography; Lodge's portraits of illustrious personages of Great Britain; and memoirs of eminent persons of the Georgian era.—The restoration in France was the signal for an avalanche of collective biographies, most of which were written with vigor and rancor, for political or personal ends. The first of these was entitled a biographical dictionary of the weathercocks, the author of which is still unknown, which was quickly followed by lives of the ministers, deputies, peers, generals, prefects, commissaries of police, clergy, academicians, journalists, and men of letters. The most caustic and impertinent of these was the *Biographie des dames de la cour et du Faubourg Saint Germain*. Recently, under the name of galleries, there have been various collections of the biographies of statesmen, women, literary men, and artists, furnished with engravings, portraits, and fac-similes; an example of this is Lester's gallery of illustrious Americans. The earliest dictionary of American biography was that of Belknap, in 2 volumes, 1794-'98. Eliot's New England biographical dictionary followed in 1809, and the latest and fullest work, devoted only to American biography, is that of Allen, the last edition of which appeared in 1857. The first example of a dictionary of universal biography, designed to embrace all men eminent in whatever department, time, or place, was that of Konrad Gesner, which was published in Zurich in 1545, and has been followed by the similar German works of S. Baur, Grohmann, Fuhrmann, Hirsching, Leidenfrost, and by that of Jöcher, continued by Adelung and others, in 11 volumes. The best German universal biographies are contained in their cyclopædias, as that of Ersch and Gruber, and the *Conversations-lexicon* of Brockhaus. The first French

universal biographical dictionary was that of Boissinière, the 8th edition of which appeared in 1645. It was followed by the famous dictionary of Moreri, in 1673, at first in 1 volume, but successively enlarged by Jean le Clerc, Du Pin, Drouet, and Goujet, till at its 19th and last edition in 1759, it extended to 10 folio volumes; by the critical dictionary of Bayle, which appeared in 1697, had 6 editions in folio, and a revised edition by Beauchot, in 16 volumes, in 1820; by the dictionary of Chauffepié, in 1750, designed as a supplement to that of Bayle; by that of Marchand, in 1758, and that of Ladvocat, of which there have been numerous editions and imitations; by that of the abbé Barrel, in 1758, in 6 volumes; that of Chaudon, which, being continued by Delandine, reached at its 9th edition, 1810-'12, to 20 volumes; that of the abbé Feller, who called himself an anti-Chaudonist, and whose work has had several editions. The most voluminous of universal biographies, and one of the most important publications of the present century, is the *Biographie universelle*, by the brothers Michaud. It was begun in 1811, and had extended to 52 volumes, when it was concluded in 1828. Three additional volumes were then devoted to a mythological dictionary, prepared by Parisot. A supplement was added to it, 1834-'40, which made the whole work extend to 84 volumes. A new edition was undertaken in 1848, which is still in process. The most of the learned and literary men in France, from the beginning of the century, have contributed to the *Biographie universelle*. Among them are Chateaubriand, De Sacy, Anger, Benjamin Constant, Walckenaer, Beauchot, Sismondi, Malte-Brun, Guizot, Villemain, Cousin, De Barante, and Biot. The articles are written with vigor, sometimes with passion, and though there are considerable diversities of philosophical and political opinion in the different contributions, the general character of the work is highly conservative. Barbier, the learned author of the *Dictionnaire des Anonymes*, published in 1820 a critical examination of historical dictionaries, which is a useful accompaniment to the *Biographie universelle*. The *Biografia universale antica e moderna*, published at Venice, is an Italian version of the dictionary of Michaud, with valuable additions concerning the celebrated men of Italy. After the fall of the empire, political discussions were carried on through the medium of biographical dictionaries. Thus the royalist party published the *Biographie des vivantes*, in 5 volumes, 1816-'19, which was answered by the liberal party from Belgium by the *Galerie historique des contemporains*, in 8 volumes, and at Paris by the *Biographie des contemporains*, in 20 volumes, in preparing which Jay, Jouy, Arnault, and Norvins took part. The latest of the French universal biographies is the *Nouvelle biographie générale*, by Hoefer (published by Didot frères), not yet completed, and which is distinguished both for learning and impartiality. The English

works of this kind are the biographical dictionary of Chalmers, in 32 volumes; the general biography of Aikin, in 10 volumes; the biographical dictionary of the society for the diffusion of useful knowledge; the universal biographical dictionary of Watkins, London, 1825; Rose's biographical dictionary, in 12 volumes, London, 1857, and the department of biography in Knight's English cyclopædia, 6 volumes. An imperial dictionary of universal biography is now in process of publication in Glasgow, edited by P. E. Dove, having in its list of associate editors the names of Prof. Nichol of Glasgow, and Prof. Francis Bowen, of Harvard university. The principal American work of the kind is Blake's biographical dictionary, in 1 large octavo volume, the 18th and enlarged edition of which appeared in 1856. There is also a convenient hand-book of universal biography by Parke Godwin, and a cyclopædia of biography, republished in this country by Appleton and co., under the editorial supervision of the Rev. Dr. Hawks. Some of the latest universal biographies contain accounts of living men, but there are also German works entitled *Zeitgenossen*, or Contemporaries, French biographies of the living, and English and American "Men of the Times," devoted only to contemporaries. There is a *Galeria de Españoles celebres contemporaneos*, edited by Cardenas and Diaz. Records of the distinguished dead of every year are also preserved in appropriate periodicals, as Longman's annual biography and obituary, the American almanac, the *Nekrolog der Deutschen*, published at Weimar, and the *Fædrelansk Nekrolog*, published at Copenhagen.

BIOLOGY (Gr. *bios*, life, and *logos*, doctrine), a term introduced by Treviranus of Bremen (1802) and used by Carus, Oken, Schelling, and other German philosophers, to denote the ultimate conditions of human life. It is now employed by some writers as synonymous with physiology.

BION. I. Of Abdera, a distinguished mathematician, and pupil of Democritus, lived in the 4th or 3d century B. C. He was the first who asserted that there were certain regions of the earth where the whole year consisted of but one day and one night, each 6 months long. II. Of Borystheneas, a Scythian philosopher, who lived in the middle of the 8d century B. C. His father was a freedman, and his mother a Lacedæmonian harlot. Because of some crime committed by the former, the whole family were sold for slaves, and Bion in consequence became the property of a rhetorician, who educated him and ultimately made him his heir. After the death of his patron, Bion went to Athens, and applied himself to the study of philosophy. Nor did he confine himself to the tenets of any particular sect, but embraced them all round in turn. He was successively an academician, a cynic, a sceptic, a stoic, and a peripatetic, and the effect of their jarring creeds on his moral and religious principles was just what might have been antici-

pated. For though a man of considerable intellectual acuteness, he was a notorious atheist, and utterly depraved, so much so indeed, that he even derided Socrates for having led a virtuous life. Bion was remarkable for the shrewdness and sharpness of his sayings. We shall give a few examples: "The miser," says he, "does not possess wealth, but is possessed by it." He asserts that "good slaves are really free, while bad freemen are really slaves." He assures us that "it is useless to tear our hair when we are in grief, for sorrow is not cured by baldness." III. Of Smyrna, a Greek pastoral poet, who flourished in the latter part of the 8d century B. C. On attaining manhood, Bion emigrated to Sicily, where a conspiracy was formed against him, and he was basely poisoned. The poems of Bion were chiefly pastoral, occasionally erotic. The fragments of them that are extant fully justify the eulogies of his admirer, Moschus. Their sentiments are tender and delicate; their style is copious, graceful, and polished. The best edition of the remains of Bion's poetry is that of I. F. Manso, published at Leipzig, in 1807.

BIOT, JEAN BAPTISTE, a French savant, born in Paris, 1774, has pursued knowledge with eagerness and success, until he has passed his 80th year. Astronomy, acoustics, optics, magnetism, electro-magnetism, and thermotics are indebted to his skilful experiments, and to his laborious and accurate calculations; and other departments of learning have not been left untouched. His highest success has been in optics. He was a companion of Arago in measuring the arc of the meridian; he experimented on the pendulum in the Scottish isle of Unst; he published in 1802 a book on curves of the second degree; in later years, a volume on astronomy and another on physics; and has contributed largely to various scientific journals, and to the annals of the learned bodies of which he is a member.

BIPONT EDITIONS, famous editions of the Latin classics, published in Bavaria in the city of Deux Ponts, whose name in German is Zwei-brücken, and in Latin Bipontium. The publication was begun in 1779, but after the French conquest was finished in Strasburg. The collection forms 50 volumes, in 8vo.

BIQUADRATIC, in algebra, signifies belonging to the 4th power, that is, to the square of the square.

BIR, a town of Asiatic Turkey, on the Euphrates; pop. about 5,000. It is a central point on the caravan route from Aleppo and Damascus to Persia and central Asia, at which the Euphrates is crossed in large boats.

BIRBHOOM, or БЕЖЕНООМ, a district in the N. W. extremity of Bengal; pop. 1,040,876; area, 4,780 sq. m.; between 23° 32' and 24° 40' N., and long. 86° 25' and 88° 30' E. The district is mountainous, wooded, and full of jungles. Its principal productions are sugar, rice, and coal. Iron ore of excellent quality is found, but so mixed that it does not as yet pay to work it. The principal town is Soorie.

BIRCH (*Betula*) a genus of monœcious trees or shrubs, which have, as generic features, both sterile and fertile flowers in scaly catkins, 8 of each under each bract, with no involucre to the broadly winged nutlet which results from a naked ovary. The sterile catkins are long and drooping, formed in summer, remaining naked through the succeeding winter, and expanding their golden flowers in early spring, preceding the leaves. The fertile catkins are oblong or cylindrical, protected by scales through the winter, and developed with the leaves. The outer bark is usually separable in thin horizontal sheets, the twigs and leaves are often spicy and aromatic, and the foliage mostly thin and light. The birch and the alder (*alnus*) were classified in the same genus by Linnæus in his later works, but are now generally regarded as distinct by botanists.—There are 19 recognized species of birch, for the most part lofty-growing and ornamental trees, found native in Asia, Europe and America, and almost all preferring the cold regions of the northern latitudes. The most widely extended of them is *B. alba*, or common white birch, a native of Europe, and found in America, near the coast, from Pennsylvania to Maine, which thrives in every kind of difficult and sterile soil, but decays where the ground is rich. It is found, though dwarfed in size, higher on the Alps than any other tree, approaches near to the icy regions of the north, and is almost the only tree which Greenland produces. It has a chalk-white bark, and triangular, very taper-pointed, shining leaves, tremulous as those of an aspen. It serves many purposes of domestic economy. The bark is employed by the Greenlanders, Laplanders, and inhabitants of Kamtschatka in covering their huts and in making baskets and ropes. An infusion of the leaves makes a yellow dye, and is also drunk like tea by the Fins; and the Russians and Swedes prepare from the sap of the trunk a fermented liquor resembling champagne.—The most graceful tree of the genus is the *B. pendula*, growing both in mountainous situations and bogs, from Lapland to the sub-Alpine parts of Italy and Asia. Its popular name is the weeping birch, and it is distinguished for its suppleness and the graceful bend and falling inclination of its long boughs. Its picturesque appearance, with its white and brilliant bark and gleaming, odoriferous leaves, makes it a favorite in parks and gardens.—The *B. lenta* or cherry birch, called also the mountain mahogany, from the hardness of its wood, has a dark, chestnut-brown bark, and abounds particularly from New England to Ohio, and on the summits of the Alleghany mountains. Its leaves and wood are aromatic; the latter also rose-colored, fine-grained, and valuable for cabinet-work.—The *B. papyracea*, or paper birch, is that from which the aborigines of America made the canoes with which they navigated lakes and rivers, and hence it is also called the canoe birch. It is a native of Canada and the northern United States, and is superior to all other

species for its tough bark, in paper-like layers, which is so durable that the wood of the fallen tree will rot entirely away, while the case of bark will be left sound and solid.—The *B. nigra*, the river or red birch, is an alder-like American species, with whitish leaves and reddish-brown bark, found from Massachusetts to the southern states. Barrel hoops are made from its branches, and its tough twigs are the best material for coarse brooms. The negroes also make vessels from it to contain their food and drink.—The *B. nana*, dwarf or Alpine birch, is a native of the Alps and of the mountains of Lapland. The Laplanders burn it on summer nights to drive off a kind of mosquito, and sleep in the fragrant smoke. It has been introduced into this country, and appears as a small shrub on the summits of mountains in Maine and New Hampshire, and in other frigid situations northward.

BIROH, THOMAS, D. D. an English historical and biographical writer, born in London, Nov. 28, 1708, died by falling from his horse, Jan. 9, 1776. By his own exertions he qualified himself for admission into the church, and having been fortunate enough to obtain an introduction to Attorney-general Hardwicke, he gained the favor of that afterward distinguished judge. He became secretary of the royal society. He published a great number of works. "Thurlow's State Papers," "Lives of Archbishop Tillotson and Hon. Robert Boyle," an edition of Milton's prose works, and the works of Raleigh, "A General Dictionary, historical and critical," and "A series of Biographical Memoirs," are among the most important of his publications.

BIROH-PFEIFFER, CHARLOTTE, a German actress and dramatist, born at Stuttgart, 1800, whose father's name was Pfeiffer, married in 1825, Dr. Birch, of Copenhagen. She early displayed a passion for the stage, and for about 20 years she performed in the various theatres of Germany, made excursions to Petersburg, Pesth, Amsterdam, and other cities; in 1837, undertook the management of the Zurich theatre, which she retained until 1848, when she received an appointment at the royal theatre of Berlin. She is also a dramatist of great industry, and produces as many as 2 plays a year. Her last play, the *Trauschein*, or "The Certificate of Marriage," appeared in the early part of 1858. She has also written several novels.

BIRD, EDWARD, an English painter, born at Wolverhampton, April 12, 1772, died at Bristol, Nov. 2, 1819. His father, a house carpenter, apprenticed him in his 14th year, at Birmingham, to the business of painting and japanning. When his apprenticeship was ended, he went to Bristol, where he opened a drawing school. In his intervals of leisure, he made several designs and sketches, 2 of which, at the Bath exhibition, in 1807, were much admired, and sold for 80 guineas each. These were followed by a piece called "Good News," an ale-house scene, which made his name more widely

known. After this came "The Chorister Rehearsing," and "The Will." Soon after, he was elected member of the royal academy. In 1811 he commenced his best and most poetical work, Chevy Chase, after the battle, and Sir Walter Scott, who was consulted on the occasion, gave Mr. Bird some valuable information on the armor, costume, and local accessories. This picture was purchased by the marquis of Stafford for 800 guineas. Mr. Bird presented Scott with the original sketch. Bird's next picture, "The Death of Eli," was also purchased by the marquis of Stafford for 500 guineas, and the British Institution awarded it a prize of 800 guineas. "The Blacksmith's Shop," "The Country Auction," "The Gypsy Boy," and a few other pictures, kept Bird's name before the public. He tried historical and sacred subjects, but without success. "The Embarkation of Louis XVIII. for Paris, in 1814," was his last subject.

BIRD, GOLDING, M. D., an English naturalist, born in Norfolk, in 1815, died at Tunbridge Wells, in Oct. 1854. Educated for the medical profession, he obtained the prize for botany given by the apothecaries' company of England. In 1836, when he was only 22 years old, he was appointed lecturer on natural philosophy at Guy's hospital, and afterward included medical botany in his course. After long practice and marked success as a teacher, he abandoned his medical practice to follow his favorite studies more devotedly. In 1848-'9, symptoms of heart disease became evident, and he soon died.

BIRD, JOHN, an English astronomical mechanician, born in the year 1709, died March 31, 1776. He was originally a weaver in Durham; but having become acquainted with a watchmaker, had his attention directed to mechanics, and became a dial plate maker, effecting the divisions with great correctness. In 1740 he went to London, and was employed by Sisson in marking off the astronomical quadrants, and at last opened a workshop of his own. He constructed the large 8 foot mural instruments for Greenwich, Paris, Oxford, St. Petersburg, Mannheim, and Göttingen. He was the master of the celebrated Ramsden.

BIRD, ROBERT M. M. D., an American physician, author of several novels and plays, born at Newcastle, Del., in 1808, died in Philadelphia, in Jan. 1854. He was educated in Philadelphia, where he began the practice of his profession, and made his first literary ventures in the columns of the "Monthly Magazine" of that city. The most successful of his tragedies is the "Gladiator," which has retained its popularity upon the stage, and the principal character in which is one of the favorite personations of Mr. Edwin Forrest. His novels, published at intervals between 1830 and 1840, are chiefly historical romances, the scene of "Calavar," and the "Infidel" being in Mexico, at the time of the Spanish conquest; that of "Nick of the Woods, or the Jibbenainosay," being in Kentucky, at the close of the war of the revolution; "Peter Pilgrim," containing a minute description of the mammoth

cave in Kentucky, and the "Adventures of Robin Day" being the story of an orphan shipwrecked on the coast of Barnegat. They are marked by picturesqueness of description, and an animated narrative. After spending several years in cultivating a farm, Dr. Bird returned to Philadelphia as editor of the "North American Gazette."

BIRD, WILLIAM, an English composer, born about 1543, died in 1623. He was a pupil of Tallis, and in 1563 was chosen organist of Lincoln cathedral, which would seem to imply that he had early in life conformed to the doctrines of the reformed church, notwithstanding that he wrote and published, at various times during his long life, a great number of ecclesiastical compositions to Latin words, forming portions of the Roman ritual. In 1589 he was appointed gentleman of the chapel royal, a position which he appears to have held until his death. The number of his vocal compositions, chiefly sacred, was enormous; and his pieces for the organ and virginals were almost equally numerous. Among the latter is a collection of nearly 70 compositions in manuscript, known as queen Elizabeth's virginal book. The fine canon, *Non nobis, Domine*, which to this day is frequently sung in England, is a good specimen of his skill as a composer of sacred vocal music.

BIRD ISLANDS. There are several islands or clusters of islands so named. I. The most important cluster is one among what are called the Leeward islands of the Lesser Antilles. The Bird islands lie off the coast of Venezuela, and immediately N. of the gulf of Triste. They are so named from the immense numbers of birds that frequent them. They belong to the Dutch, and are settled only by a few fishers. II. The most important single island thus named is in the North Pacific ocean. It is a solitary rock rising out of the bosom of the sea, and has its name for the same reason assigned above. The Sandwich islanders had given this name in their language. It should probably be reckoned as one of the Sandwich group. It was discovered in 1788, by the captain of the Prince of Wales. It is in lat. 23° 6' N., and does not exceed one mile in diameter in any place.—There are also Bird islands on the coast of Ireland, Africa, Newfoundland, and in the Eastern archipelago.

BIRD LIME, a glutinous, viscid substance, of greenish color and bitterish taste, prepared by boiling the middle bark of the European holly (*ilex aquifolium*) or of the *viscum album*, or some other plants, as the mistletoe and other parasites, for some hours, then separating it from the liquid and leaving it for a fortnight in a moist cool place to become viscid. It is next to be pounded into a tough paste, well washed, and put aside for some days to ferment. Some oil or thin grease is to be incorporated with it, when it is ready for use. Its characteristic properties appear to identify it with the principle *glu* of the French chemists, which exudes spontaneously from certain plants. It differs from resins in being insoluble in the fixed oils.

Bird lime is so tenacious that small birds alighting upon sticks daubed over with it are unable to escape. It is used for this purpose and also for destroying insects. Large quantities of it were formerly exported from Great Britain to India, and it is now an article of import in England from Turkey.

BIRD OF PARADISE, genus *paradisea*, Linn; belonging to the order *passeres*, tribe *conirostres*, and family *paradisæida*. Seven species of the genus are described: *P. apoda*, Linn. *P. papuana*, Bechst. *P. rubra*, Vieill. *P. speciosa*, Bodd. *P. regia*, Linn. *P. atra*, Bodd. *P. seppennis*, Bodd. The genus is characterized by a bill, long, strong, with the culmen curved to the emarginated tip, and the sides compressed; the nostrils lateral and covered by short feathers which conceal the base of the mandible; the wings long and rounded, with the 4th and 5th quills equal and longest; the tail is of various lengths, even or rounded; the tarsi as long as the middle toe, robust and covered by a single lengthened scale; the toes very long and strong, the outer larger than the inner, and united at the base, the hind toe long and robust; the claws long, strong, much curved and acute; the sides of the body, neck, breast, tail, and sometimes the head, ornamented with prolonged showy feathers. These birds are peculiar to New Guinea and the neighboring islands; they are active and lively in their movements, and are usually seen on the tops of high trees, though they descend in the morning and evening to the lower branches to search for food, and to hide in the thick foliage from the heat of the sun. The food consists chiefly of the seeds of the teak tree, and of a species of fig; they also devour grasshoppers and other insects, stripping off the wings and legs before swallowing them; in confinement they will eat boiled rice, plantains, and similar food. Their cry is loud and sonorous, the notes being in rapid succession; the first 4 notes are said by Mr. Lay to be clear, exactly intonated, and very sweet, while the last 8 are repeated in a kind of caw, resembling, though more refined than those of a crow or daw.—The best known species is the greater paradise bird (*P. apoda*, Linn.), whose body is about as large as a thrush, though the thick plumage makes it appear as large as a pigeon; it is about 12 inches long, the bill being 1½ inch. The head, throat, and neck are covered with very short dense feathers, of a pale golden color on the head and hind part of the neck, the base of the bill being surrounded with black velvety ones, with a greenish gloss; the fore part of the neck is green gold, with the hind part, back, wings, and tail chestnut; the breast chestnut, inclining to purple; beneath the wings spring a large number of feathers, with very loose webs, some 18 inches long, resembling the downy tufts of feather grass; these are of different colors, some chestnut and purplish, others yellowish, and a few nearly white; from the rump spring 2 middle tail feathers, without webs except for the

first few inches and at the tip, and nearly 8 feet in length; the remaining tail feathers are about 6 inches long, and even at the end. The natives call this bird *Burung-dewata*, or "bird of the gods," from which perhaps the common name is derived. The Malay traders, who first brought them from New Guinea, cut off the legs of these birds, and pretended that they lived in the air, buoyed up by their light plumage, never descending to the ground, and resting at night suspended from the trees by the long tail feathers; other fables, such as that they fed on the morning dew, hatched their eggs out between the shoulders, and came from the "terrestrial paradise," were added in order to increase the value of these beautiful birds in the Indian markets. From the nature of their plumage they cannot fly except against the wind; when the feathers get disordered by a contrary breeze they fall to the ground, from which they cannot readily arise; in this way many are caught; others are taken by bird lime, or shot by blunt arrows, or so stupefied by *cocculus Indicus* as to be caught by the hand; when at rest they seem to be very proud of their beauty, carefully picking from their feathers every particle of dust; they are shy and difficult of approach. Batavia and Singapore are the chief ports whence these birds are exported to Europe; the Bugis of Celebes bring great numbers of them thither in their boats from New Guinea and the Arroo group. The whole bird is a highly coveted ornament for the heads of the East Indian grandees as well as for the bonnets of the civilized fair sex.—The *P. papuana*, Bechst., is a smaller bird, of the same general appearance, with the throat and neck before green; top of the head, nape, and neck ferruginous yellow; back yellow with a grayish tinge; breast, belly, and wings chestnut. This and the preceding species are said to fly in flocks, led by a king who flies higher than the rest.—The *P. rubra*, Vieill., is about 9 inches long, and principally characterized by the fine red color of the subaxillary feathers, and the absence of the elongated slender shafts.—The magnificent paradise bird (*P. speciosa*, Bodd.), is of a general rufous color above, and of a brilliant green below, with a tuft of beautiful yellow feathers on the hind neck, marked at the end by a black spot.—The king paradise bird (*P. regia*, Linn.) is about 7 inches long; it has the head, neck, back, tail, and wings purplish chestnut, with the crown approaching to yellow and the breast to blood-red, all with a satiny gloss; on the breast is a broad bar of brilliant green, below which the belly is white; the subaxillary feathers are grayish white, tipped with shining green; the middle tail feathers are spirally coiled, with the webs of a glossy green color.—The superb paradise bird (*P. atra*, Bodd.) has a black crest, with the head, hind neck and back of a greenish gold color, of a velvety appearance, and overlying each other like the scales of a fish; the wings a dull deep black; tail black, with a

blue gloss and even at the end; throat changeable violet; belly bright golden green; subaxillary plumes black and velvety, rising upon the back and resembling a second pair of wings.—The gold-breasted paradise bird (*P. seppennia*, Bodd.) is also crested; the top of the head, cheeks, and throat changeable violet black; fore neck and breast brilliant changeable green; back deep black, with a violet gloss; wings and tail black; the subaxillary feathers are long and black, with loose webs like those of an ostrich; on each side of the head are 8 long feathers, webless except at the end, where they are spread into an oval form.—The 12 wired paradise bird belongs to the family *upupida*, and to the genus *epimachus*; it is a native of New Holland, and is distinguished by a splendid green band across the breast, by the silky softness of the white feathers below, and by 12 wiry appendages prolonged from them. No description can give any idea of the graceful forms and brilliant hues of the paradise birds; our own beautiful humming birds come nearest to them in fairy-like structure of their plumage, and in the gorgeous, metallic, and ever changing lustre of their colors.

BIRD'S-EYE VIEW, the aspect of a thing as seen from above, just as a bird is supposed to see objects on the earth when soaring in the air. This is a favorite mode of taking pictures of places, as a bird's-eye view of the city and harbor of New York. The phrase, to take a bird's-eye view of a thing is employed. It is sometimes used metaphysically to mean a cursory, not minute, mental glance at a subject.

BIRDS (*aves*), a class of vertebrate animals, distinguished from all others by certain peculiarities, and also by a combination of other characteristics, the union of which is not to be found elsewhere. They are biped, as are, also, certain mammalia; are oviparous exclusively, which no other class is; and are, with very few exceptions, covered with a feathered coat, adapted, more or less perfectly, for flight. They have frames penetrated through all their parts by air-cells that facilitate motion by increasing lightness. By means of external substitutes for organs of reproduction, usually called nests, they develop *ova* after excluding them. The last 2 peculiarities distinguish birds from all other animals. No others possess the same, or even similarly aerified structures, and none—though many, both vertebrate and invertebrate, are oviparous,—exhibit any corresponding resort to nests for the development of their eggs. All birds, without a single known exception, are biped, which, without being an exclusive peculiarity, is very nearly so. All, or nearly all, possess more or less perfect powers of flight. Even the few exceptions have certain rudimentary substitutes for wings, that are never so far completely developed as to become available. The families which constitute these exceptions are both small in number and varieties of species, and in regard to that of the individuals composing them. They

are all formed either for motion on the land, or in the water, exclusively. In all these instances the feathery coverings are incompletely developed, possessing a proximate resemblance to the hairy covering of certain land and water animals. The ostrich and the penguin may be named as typical of these 2 distinct forms of exception, both in regard to their inability to raise themselves into the air, and their exceptional hair-like plumage.—In the internal organization of the entire class of birds there are other and more noticeable anatomic peculiarities. Their skulls are without the sutures that are found in mammalia, forming consolidated bones. These are joined to the neck or spinal column by one single joint, so constructed as to give the most perfect freedom of motion in horizontal and lateral directions, without danger of dislocation or injury. In the place of teeth they have upper and lower jaw, forming unitedly the bills, which are composed of a hard horny substance. These subserve a similar purpose to the teeth, the place of which they take. In several families of birds the upper part of the bill is articulated with the skull. The parrots are familiar examples of this peculiarity of structure. More commonly the skull and upper jaw are united by means of an elastic bony plate, by the interposition of which the brain is admirably protected from injuries, to which it would otherwise be unavoidably exposed. The upper extremities of birds, analogous to the arms or forelegs of other animals, differ essentially in never being used as prehensile organs, or for motion in contact with the earth, as in walking or running. Their use is almost exclusively for flight, and they serve as the basis of their wings. The cervical vertebrae of birds are more numerous than those of mammals. In the latter their number is uniformly 7, while in birds there are never less than 10, and in some instances as many as 23. Their dorsal vertebrae are more fixed and limited in their motion than the cervical, and are usually 10 in number, rarely 11, and in some instances only 7 or 8. The pelvis in birds is a simple elongated plate, open below, terminated by the rump, which supports the tail-feathers. The breast-bone, or *sternum*, is, perhaps, the most noticeable feature in the bony skeleton of birds. It is also one of the most important parts of the osseous frame-work, as it forms the base for the insertion of the most powerful of the muscles of flight. Its prolongation or crest determines with infallible accuracy the degree of power of flight of its possessor, and is entirely wanting in those destitute of the power of raising themselves in the air. The merry-thought (*furcula*) should be here mentioned as another peculiarity to birds of flight, and wanting only in those not possessed of that power. The lower extremities of birds are employed for purposes of locomotion, for standing and roosting, and, in some birds, for obtaining food. Their bony

frame-work comprises a thigh-bone, 2 leg-bones, a metatarsal or ankle-bone, and the bones of the toes. The last vary in number, and terminate in nails, of greater or less importance in their animal economy, according to the habits of the family possessing them. The variations in the mechanism of the lower extremities are often very curious and striking. The birds which roost, and more especially those which are in the habit of standing long at a time upon one leg, are enabled, by the remarkable arrangement of the bones, and the muscles attached to them, to do either with very little effort or fatigue on their part. Not less interesting, and even more striking and curious in their variety and their peculiar adaptation to their several purposes, are the muscular and other integuments which cover the bony frame-work of all the members of the entire class. As might be expected, in birds of vigorous flight, we find the pectoral muscles presenting the greatest development. These are often found to exceed in weight and bulk that of all the others. The great-pectoral and the middle-pectoral are antagonistic forces, alternately depressing and elevating the wings, while the small pectorals, or third pair, aid materially in varying the manner and character of the flight. The muscles of the lower extremities vary greatly with the habits of the bird, and especially according to their being climbers, waders, swimmers, perchers, &c. A minute detail of the wonderful mechanism by which birds are enabled to perch or roost without any apparent effort to sustain themselves, or a full account of those by means of which are regulated the movements of the jaws, those of the neck, or of the tail, would exhibit most interesting evidences of a wonderful design in their adaptation to their several purposes, but would unduly extend the present article. Beside their muscular integuments, all birds have horny beaks and nails, a fleshy cere at the base of the bill, and scaly coverings to the lower extremities, wherever they are bare. Their peculiar covering, found more or less perfectly in the whole class, and in no other, is their plumage of feathers. In certain families, that of the ostrich for example, the plumage of feathers makes a remarkably close approach to the hairy covering of land mammals. In other families, such as the divers, the alcades, the guillemots, &c., the plumage more nearly approaches the furry coats of the otter and the seal. In the young of birds the proximate resemblance of their plumage to the hairy covering of mammals is even more marked. The limits of the present article will not permit the description, at any length, of the interesting changes in the color, and other characteristics of the plumage, that mark the age and gradual development of all birds, and which present a variety, in all respects, that is almost beyond conception. Nor can we describe, in full, the very peculiar and curious glands by means of which birds dress

their plumage and protect it from the inclemencies of the weather. The bills of birds are yet another peculiar feature with the class that should not be omitted, though all the varieties of contrivance by means of which they discharge the duty of supplying food are also beyond the limits of this article. These enable the raptorial families to tear their prey into fragments; they supply to the fly-catcher, the swallow, and the whip-poor-will, most exquisitely contrived insect-traps; they give to the woodcock, the snipe, and other waders, the power of determining what is suitable for food with no other aid than the most delicately sensitive nervous membranes of their long probe-like jaws.—In birds, the alimentary canal comprises an oesophagus, a crop, a membranous stomach, a gizzard, an intestinal canal, and a cloaca, in which the urinary ducts also terminate. The gizzard is a powerful organ in promoting digestion, especially with gallinaceous and other graminivorous birds.—That peculiarity of structure, however, which more than any other, distinguishes this from every other class of animals, is the immediate and constant connection of the lungs with numerous air-cells that permeate the entire frame, extending even throughout the bony portions. These membranous air-cells occupy a very considerable portion both of the chest and of the abdomen, and have the most direct and uninterrupted communication with the lungs. The long cylindrical bones are so many air-tubes. Even the flat bones are occupied by a cellular bony network, filled with air. The large bills in certain genera, even the very quill feathers when fully developed, receive more or less air from the lungs, at the pleasure of the birds. By these means the erectile crests of a number of species are alternately depressed or elevated. The design of these wonderfully contrived chains of air-cells, penetrating into every portion of the structure of birds, is too obvious to require an extended explanation. Lightness of the body for motion in the air or water, or on the land, is indispensable. Hence we find, in birds of the highest and most rapid flight, the largest supply of air-cells. This pneumatic apparatus is also supposed to assist materially in the oxidation of the venous blood, and the air contained in the cells is presumed to operate upon the blood vessels and lymphatics in contact with them. The volume of air which birds are thus enabled to introduce into their bodies, the ease and power with which they can, at will, expel it, taken in connection with their peculiar organs of voice, satisfactorily account for what would otherwise be inexplicable; explaining how some of the smallest members of the class, the common canary bird, or the black-poll warbler of North America, for instance, are enabled to give utterance to such powerful notes, and to continue them so long without any apparent effort. The construction of the larynx in this class is a very peculiar one, bearing a remarkable resemblance to certain wind instruments. This

organ is made up of 2 parts, the true *rima glottidis*, at the upper part of the windpipe, and the bronchial larynx, which is furnished with a peculiarly tense membrane, performing the same duty as the reed in a clarinet.—The large proportionate development of the brain and of the nervous system of birds is another distinguishing feature of their organization. In many cases they exhibit an apparent superiority to the corresponding organs in mammalia of the same relative size and weight. Thus, for instance, while in man the size of the brain, in proportion to that of the whole body, varies from $\frac{1}{12}$ to $\frac{1}{15}$ part, that of the common canary bird is $\frac{1}{12}$. There are, however, great variations in regard to the size of these organs in different families and even in different genera of the same families. Thus, while the brain of the goose is $\frac{1}{12}$ of the entire body, that of the eagle is $\frac{1}{15}$, and that of the common European sparrow is $\frac{1}{12}$. It differs chiefly from the same organ in mammalia, in the presence of certain tubercles corresponding to the *corpora striata* of other animals, and the absence of several parts found in the brains of the latter.—The senses of sight, smell, and hearing, are supposed to be most acute in a large proportion of the families of the class, much more so than that of taste, which is found well developed in only a few families, and still more than that of touch, which is presumed to be totally wanting. The organs of sight are of great proportionate magnitude, and occupy a large proportion of the cerebral developments. They are constructed with a wonderful contrivance not inaptly compared with so many peculiar kinds of "self-adjusting telescopes." They are also all provided with a very curious apparatus called the nictitating membrane. This is a fold of the *tunica conjunctiva*, so arranged as to be capable of being drawn out to cover the eye like a curtain, and to be withdrawn at will, enabling the possessor to meet the brightest rays of the sun undazzled by its brilliance, and protecting the organ from injuries.—With only a few exceptions birds have no external organs of hearing corresponding to an ear. We find instead an aperture that is called *meatus auditorius*. The internal membranes of this organ are connected with each other by means of the air-cells of the skull and have but a single auditory bone.—Among different authors there is much diversity of opinion in regard to the development of the sense of smell in birds. The experiments of Audubon and Bachman would seem to prove that, even in those families in which this sense is presumed to reach its highest point of perfection, the members are directed by sight rather than by smell to their prey. Still it is quite certain that they possess certain nervous developments corresponding to olfactory organs, which, if not designed for smell, possess no very apparent purpose.—The sense of taste has a limited degree of development in a few families, such, for instance, as the divers, the waders in part, and

the several families of humming birds, honey-suckers, and a few others. As a general rule it is very imperfect, or even wholly wanting.—The various contrivances and instinctive expedients, by means of which the entire class of *aves* develop the germs of their mature or perfect *ova*, are remarkable as well as distinguishing features in the economy of their propagation. They are peculiar to the class, and are without any known exceptions. They are shared with them by no other class of animals, with only occasional but remote approximations, apparent exceptions rather than real. Every individual of the entire class deposits the matured egg without any distinguishable development of the young bird. Lightness and buoyancy of body, whether for flight in the air, or for freedom of motion on land or in water, are essential pre-requisites in the animal economy of all the various families of the class. So, to nearly the same extent, is also their abundant reproduction. The vast numbers of their enemies, and the many casualties to which they are exposed, render a large and constant propagation necessary for their preservation. It is quite evident that any habit at all corresponding with the gestation of viviparous animals would be inconsistent with both of these requirements. It would destroy lightness of body, prevent freedom of motion, expose to innumerable dangers from enemies, hinder from procuring food, and make fecundity an impossibility. Thus, the common quail or partridge (*ortyx Virginiana*) of the Atlantic states, has been known to have 86 eggs in a single nest. Before maturity the product of this nest exceeds in weight their parent at least 20 fold. To provide for these or but one of them, by internal organs of development, would be impossible. Yet how simply, how perfectly, and how beautifully are all these requirements met by means of external substitutes. The nests of birds correspond with them in their duties and uses, to the uterine organs of reproduction of mammalia, and yet more to the marsupial pouches of certain Australian quadrupeds. They serve as external organs indispensable to the development of the immature young, from the first appearance of the germ in the egg, to a maturity more or less advanced, and varying greatly with the family; from the ostrich that comes into the world able to shift for itself from the very shell, to the blind and naked offspring of other families that are utterly helpless when first hatched. For this development of the young birds there are two essentials—the external receptacle which, though not always with exactness, we call nests, and the application of a certain nearly fixed or uniform amount of calorific. In nearly all cases the latter is generated by contact with the bodies of the parent birds. In some it is aided by the heat of the sun. In a few instances this is effected by heat derived from vegetable decomposition, or from the sun's rays, without any parental intervention after the deposition of the egg.—

Attempts have been made, with some partial success, to classify the various architectural contrivances, or their substitutes to be found connected with the nesting and incubation of birds. The most recent and most nearly successful attempt to systematize the subject is that of Prof. James Rennie of King's college, London. To this the present article will nearly conform, giving, where practicable, indigenous representative examples and supplying the more noticeable deficiencies of that arrangement. In this system the entire class are ranged in 12 groups: miners, ground-builders, masons, carpenters, platform-builders, basket-makers, weavers, tailors, felt-makers, cementers, dome-builders, and parasites. The objections to this arrangement are, that it is imperfect in itself, and that it corresponds with none of the usual systems of ornithological classification. The large number of species which, without being miners or carpenters, invariably occupy for their nests corresponding sites, namely, holes in the earth or hollow trees, have no appropriate place. Some of these have been improperly classed as parasites. Nor is there a well-defined place for the large variety of species belonging to every order, which resort to the bare ground, making no perceptible nest, or for that remarkable family of Australian birds, the mound-builders, which combine something both of the miner and the ground-builder. It seldom if ever conforms, in a single family even, with any known classification. Thus, the hawks are platform-builders, ground-builders, occupants of hollow trees, &c. The swallows are miners, cementers, dome-builders, masons, &c., and so on. The mining birds compose a very large group, belonging to nearly every order, and having no other common peculiarity. They may be divided into 2 well-marked subdivisions: the true miners, which excavate holes for themselves, in which they construct their nests, and those which, without mining, occupy sites precisely similar. Of these a portion are supposed to be parasitic, availing themselves of the labors of others. Among the true miners may be named the common bank swallow, found nearly throughout the habitable globe, the bee-eaters of Europe and Asia, and the whole genus of *thalassidroma*, better known as storm petrels or mother Carey's chickens; as also the several genera of puffins, king-fishers, penguins, &c. Among the other class, miners only by occupancy, may be named the wood wren and the winter wren of North America, the black guillemot, and the burrowing owls of North and South America. The last are parasitic miners, occupying invariably holes dug by other animals. The ground-builders include by far the largest group of birds of every order, and nearly of every family, and cannot be defined with exactness. In it must be classed many which build no nest, others that do, or do not construct nests, according to circumstances, those which build on the ground usually, but frequently elsewhere, some that are usually

ground-builders, but at times true miners, like the sky-lark of Europe, &c. The night-hawks and whip-poor-wills of America make no nest, the former depositing their eggs upon the bare earth, always selecting a site corresponding in color to their eggs, the latter selecting dried leaves as better suited to the same purposes of concealment. A very large proportion of the shore birds, waders, gulls, &c., make use of the bare sand with only a slight excavation for a nest. Others of the same species are more pains-taking, and construct well-formed nests. The herring gulls usually build a slight nest on the ground, but, after having been repeatedly robbed by eggers, the same birds are known to construct large and quite elaborate nests in trees or on precipitous cliffs. The mound-builders of Australia (see BAUGH TURNER) combine, in part, the habits of the miners with those of the ground-builders, in a manner peculiar to that remarkable family. Among the true ground-builders may be cited nearly all the vultures, the entire sub-family of *circidae* or hen-harriers, the *sonotrichia* or song sparrows of America, nearly all the waders, ducks, geese, swans, gulls, terns, &c., with more or less representatives in every order. The birds which, from their habits in nest-building, are classed as masons, are comparatively few in number of species. They are so called because they construct their nests, in whole or in part, with walls, coverings, barricades, &c., of mud or clay. Of this class the cliff swallow of North America is one of the most remarkable examples. The house swallows, both of Europe and America, the thrush and blackbird of Europe, the robin and the pewee flycatcher of North America, are among the most familiar examples. The species known among writers and travellers as the baker bird of South America may be given as the most skilful and remarkable of this class. This species constructs a nest in the most exposed situations, but at a considerable height, hemispherical, or in the form of a baker's oven, and hence its name. The opening of this nest is lateral, and is twice as high as it is wide, and the interior is divided into 2 chambers by a partition beginning at the entrance. The true carpenters are also a comparatively small group, consisting of those which excavate, by their own labor, holes for their nests in trees. Corresponding in the selection of the sites for their nests, but obtained without labor, are a yet larger number of species, that, for convenience, are grouped with them, some of which are also parasitic. The large and widely distributed family of *picidae* or woodpeckers are the most familiar examples of the carpenter bird. With them are also classed the toucans of South America, the tomtits, the wrynecks, and the nut-hatches. Among the more common examples of the birds which, without being true carpenters, resort to similar places for their nests, may be mentioned the sparrow-hawk, the blue bird, the purple martin, the white-bellied swallow, and the house wren of North Ameri-

ca, several species of owls, and many others.—The platform builders are a small but distinct class, whose architecture is well defined. In it are embraced most of the *falconidae* or hawk tribe, the wood-pigeons, the cuckoos of America, &c. All the eagles are true platform builders, and many of them construct elaborate and remarkable nests. The nest of the white-headed eagle is a massive structure, sometimes forming an exact cube, each side of which is 5 feet square. The martial eagle of southern Africa also constructs a large platform, said to be able to support the largest man. These nests are perfectly flat, with no other security against the eggs rolling off than the ever small number of the latter and the constant presence of one of the parents. The common passenger pigeon, the turtle dove, and the yellow-billed cuckoo of North America, are the most familiar examples of this class, as also, in Europe, are the wood pigeons, the ringdoves, the herons, and the storks. Another larger class, whose architectural accomplishments are even more remarkable, are the basket-makers. Many of these exhibit an elaboration and an ingenuity beyond the power of human skill to imitate. The vireos of North America weave a cup-shaped basket nest, pendant from some convenient twig, the leaves of which conceal them from enemies. The European bullfinch, the American mocking-bird, the red-winged blackbird, the yellow-headed troopials of North America, the ravens, crows, and magpies, and the cyanotis omnicolor of Chili, may be mentioned as among the more familiar or remarkable of this interesting group. The last-named bird attaches a nest of singular beauty and elaborateness to the stems of the large reeds of that country, constructed to resemble the ripened seed-vessels of the plant so closely as to deceive even the most wary. The locust-eating thrush of southern Africa builds a large basket fabric, containing many cells or separate nests, from 6 to 20 in number, the joint products of, and occupied by as many pairs. The pensile grosbeak swings its basket nest from a pendant twig over a running stream, and makes its entrance from the bottom. The sociable grosbeaks unite in the construction of a large, basket-like cluster of nests, sometimes containing 200 or 300 in a single structure. To describe all, or even a small portion of the varieties of this remarkable class, is beyond our present purpose or our limits. The weavers are closely allied to the preceding class, differing chiefly in their more pensile nests, and in the superior nicety of their structure. The weaver-oriole of Senegal is one of the most remarkable of this class. The Baltimore oriole of America, the Indian sparrow of southern Asia, the crested fly-catcher of southern Africa, and the yellow-hammer of Europe, are among the more familiar and distinguishing instances of the weavers. Hardly distinguishable from the 2 preceding groups are the few species classed as tailors. The orchard oriole of America is hardly entitled to be so classed, though usually quoted as a

true tailor. The best known instance is that of the *sylvia sutoria* of the eastern continent, which sews a dead leaf to a living one, and between them constructs its tiny nest. The blue yellow-back warbler of America is another remarkable tailor, though its wonderful skill is as yet little known or appreciated. The felt-makers form quite a large and well-marked group of artificers among birds. These arrange the materials of their nests, though more loosely, in the same manner as that in which are put together the fibres of felt. These materials are, to all appearances, corded together. How this is done cannot be satisfactorily explained. The chaffinch of Europe, the goldfinch of America, the canary-bird, and the whole family of humming-birds, may be given as exemplifications of this peculiar and interesting group. The cementers compose a very small but well distinguished class, all the members of which, so far as is at present known, belong to the family of swallows. These birds secrete, from glands on each side of the head, a strongly adhesive glue, which is dissolved in their saliva, with which they unite the materials of their nests, and fasten them to their proposed sites. The chimney swallow of North America is the most familiar example of this group, while the esculent swallow of the East is the most remarkable. The dome-builders might without inconvenience be merged into the several groups of weavers and basket-makers. They consist of a large number of species belonging to a great variety of families, who construct covered nests, which are entered by holes in the side. These nests are more common in tropical countries than in cold. The marsh-wrens, several of the *sylvicola*, among these the Maryland yellow-throat, the golden-crowned thrush or oven-bird, the meadow-lark, and the quail, of North America, are among the most familiar representatives of this group on this continent. In Europe it embraces the common wren, the chiff-chaff, the hay-bird, the wood-wren, the sparrow, the magpie, and the bottle-tit, among its best known members. The last group is one which it is not easy to classify. The true parasites, those which, like the cuckoo of Europe, the cow-blackbirds of North America, and its congener of South America, never rear their own young, but intrude their offspring upon strangers, always laying their eggs in the nests of other species, are a small but well-marked class. The larger number, which resort to the chosen sites of other birds, but build their own nests and rear their own young, are less clearly defined, because they are not uniformly parasitic in their habits. Of this latter class the house-sparrow of Europe as often makes its own nest as it seizes upon that of another species. Nearly or quite all of this class, usually marked as parasites, are so only occasionally, and by force of circumstances. The true members of the group are not many, and, so far as is at present known, are confined to the two genera, *cuculus* or true

cuckoos, and molothrus or cow-birds. (For the systematic classification of birds, and the history of the science, see OENITHOLOGY.)

BIRDS'-NESTS, EDIBLE, the nest of the sea-swallow of the Malay archipelago, the lawit of Java, and *salangans* of the Philippines, *hirundo esculenta* of botanists. The bird is uniformly dark-colored, inclining to green on the back, and blue on the breast, has a short, strong bill, broad at the base, and is a little smaller than our swallow martin. It gathers from the coral rocks of the sea, a glutinous weed or marine fucus, which it swallows and afterward disgorges, and then applies this vomit, with its plastic bill, to the sides of deep caverns, both inland and on the sea-coast, to form its nest. When complete the nest is a hollow hemisphere, of the dimensions of an ordinary coffee-cup; when fresh made, is of waxy whiteness, and then esteemed most valuable; of second quality, when the bird has laid her eggs; and of third, when the young are fledged and flown. The lawit frequents mostly the deep, surf-beaten caves of the S. coast of Java, principally those of Karang Bollong (Hollow reefs), in the province of Baylen. These caves open at the base of a perpendicular face of rock, nearly 500 feet high, the mouths being from 18 to 25 feet in breadth, and 80 feet in height; within they continue to expand, until they attain the enormous dimensions of from 100 to 120 feet in width, and 450 feet in height, and for many hundred feet within the waves of the Indian ocean break with terrific fury. The collectors of the nests, like the Orkney gatherers of eider duck down, are lowered over fearful chasms, and move along a slippery foothold, at the risk of instant destruction. The collections take place in April, August, and December. The day previous to the descent into the caves, a *bimbang* or feast is given, *wayangs* or games in masks are performed, buffaloes and goats are killed, the flesh of which is freely distributed, and a pretty young Javanese girl is dressed up in peculiar costume, and personifies Nyai Ratu Kidul (the lady queen of the south), an imaginary personage, to whom offerings are made, whose assistance is invoked, and who must give permission that the collections shall commence, without which the collectors, though trained from infancy to the dangerous pursuit, cannot enter the caves. The Nyai is of course always favorable, when competent judges are assured that the right period for collection is at hand. These nests are also obtained in other parts of Java, and the islands eastward, on the coasts of Borneo, and in the limestone caves of the Philippines. The whole product of Java, and Netherlands India, in 1850, on account of the government, of which it is a monopoly, was 268 $\frac{1}{2}$ piculs, or 85,784 pounds, worth 560,884 florins, or about \$250,000, selling according to quality, at from \$5 to \$20 a pound; some of the finer sorts selling in Chinese markets for twice their weight in silver. It is well known that the edible nest is a whimsical culinary fan-

cy of the Chinese alone. They use it in the preparation of their most refined soups. Alone it has an insipid glutinous taste. A portion of the precious article is oftentimes, by way of ostentation on the part of a host, placed in a prepared dish of food already on the table, and in the view of the seated guests. The Chinese attribute to it peculiar strengthening qualities; but this sensual people chiefly prize it for its alleged properties as an aphrodisiac; and it is singular that this word is derived from the Greek word *σφοδρ*, "scum of the sea," which the gluten of this nest certainly is.

BIRKBECK, GEORGE, M. D., a social reformer and the founder of the first mechanics' institute in England, born at Settle, Yorkshire, Jan. 10, 1776, died in London, Dec. 1, 1841. He early displayed a love for scientific pursuits; studied medicine in Leeds, Edinburgh, and London; was intimate while at the Scottish capital with the founders of the "Edinburgh Review," and was elected professor of the Andersonian institute at Glasgow. In Nov. 1799 he gave his first course of lectures at Glasgow, on natural and experimental philosophy. As there were no philosophical instrument-makers at Glasgow, he was obliged to have recourse to ordinary workmen to furnish his apparatus, and while explaining to them the uses of the instruments, he was struck with the idea of giving a gratuitous course of scientific lectures to the Glasgow mechanics. In 1801 he issued his prospectus for the establishment of a class solely for persons engaged in the practical exercise of the mechanical arts, men whose education in early life had precluded even the possibility of acquiring "the smallest portion of scientific knowledge." The first lecture was attended by 75, but so satisfactory was it to those who were present that at the 2d lecture the number was increased to 200, at the 3d to more than 800, and at the 4th to more than 500. In 1803 and 1808 the lectures were continued; in 1804 he resigned his professorship and quitted Glasgow; in 1806 he settled in London, where he obtained a good practice as physician. In 1820 he gave a gratuitous course of 17 lectures at the London institution. In 1823, a public meeting took place at the Crown and Anchor, at which he presided, and which Dr. Lushington, Jeremy Bentham, David Wilkie, and Mr. Cobbett, attended. The first officers of the "London Mechanics' Institution" were elected, and Dr. Birkbeck was chosen president. He continued his professional avocations, but to the last gave much time and labor to efforts for the education of the people.

BIRKENFELD, a principality of Oldenburg in Germany; lies on the left bank of the Rhine, in the valley of the Nahe, between Lichtenberg and the province of the lower Rhine; area, 148 sq. m.; pop. in 1855, 82,529. The soil is poor, though well cultivated wherever practicable. Its surface is covered with forests and mountains; it possesses iron mines and produces agates, chalcedony, &c., which are wrought for

exportation. It has a market town of the same name, pop. 2,900.

BIRKENHEAD, a market town and port of Cheshire, England, on the estuary of the Mersey, opposite Liverpool, with which it has constant communication by 3 steam ferries. It comprises the old extra parochial district of its own name, a part of Oxtan in Woodchurch, and the township of Claughton in Bidstone. A railway, 16 miles long, connects it with Chester, whence other roads diverge to various parts of the kingdom. Although a place of considerable antiquity, having been founded at least as early as the 12th century, it dates its present prosperity from a very recent period. Originally a poor fishing village, numbering in 1818 scarce 50 inhabitants, it grew with a rapidity seldom witnessed in the old world, until in 1851 its pop. was 24,285. This increase is mainly owing to its excellent docks, constructed since 1824. In that year large ship-building docks were erected on Wallasey-pool, on the N. W. side of the town, and in 1844 a series of splendid works, embracing a sea-wall from Woodside to Seacombe, docks at Bridge-end, a tidal basin 87 acres in extent and accessible at all times by vessels of 12 feet draught, and a basin of 16 acres for coasters, were commenced on the Mersey side. The plan was also made to embrace the construction of a dam to pen up the waters of Wallasey-pool into a float, which should communicate with the principal tidal basin. The first dock was opened in 1847. Warehouses, on a scale of corresponding magnificence, have also been erected.—The town is well laid out, well lighted, paved, and drained, and well supplied with water. The streets are remarkably wide and regular, the main thoroughfares, 5 in number, running nearly east and west, and the shorter streets crossing them at right angles. Hamilton square, on high ground near the river, is a beautiful public place, $6\frac{1}{2}$ acres in extent, and planted with shrubbery. On Conway street, one of the principal avenues, is a public park, with an area of 180 acres, embracing flower-beds, plantations, lakes, and drives. A well-stocked market, 480 feet long by 131 feet wide, massive freestone slaughter houses, and model dwelling houses for the working classes, are among the other notable features of the town. There are 4 handsome churches of the established religion, a Scotch church, Roman Catholic and dissenting chapels; a theological school, established in 1846, to provide clergymen for Birkenhead, Liverpool, and neighboring places; an infirmary, a lying-in asylum, a dispensary, a mechanics' institute, and many free schools in connection with the different churches and chapels. There is no custom house, the entries being made at Liverpool. Manufactures are carried on with activity, and embrace pottery, varnish, boilers, guns, &c. There are also extensive ship-yards and iron foundries. The affairs of the township are managed by 21 elective commissioners. There were formerly

24, 8 of whom were appointed by the town-council of Liverpool, but in 1846 the board was constituted as at present.—A priory was founded here by Harris de Massey in 1150, and richly endowed. It was occupied by the royalists in 1644, and taken from them by the parliamentary troops. In 1848 it was demolished, and nothing now remains but a portion of the gable and one Gothic window, which formerly belonged to the refectory.

BIRKENHEAD, SIR JOHN, an English satirical and political writer of the 17th century, born at Northwich, in Cheshire, in 1615, died in Westminster, Dec. 4, 1679. He was educated at Oxford, and appointed secretary to Archbishop Laud; in 1642 he commenced the publication of the "*Mercurius Aulicus*" or court journal; this he conducted for 3 years, its contents being chiefly panegyrics of the king and court. He became in consequence an object of aversion to the parliamentarians, who persecuted him constantly during the commonwealth. At the restoration he was knighted and received several lucrative offices.

BIRKET-EL-HADJI (lake of the pilgrims), a small lake lying N. E. of Cairo in Egypt. It is a place of rendezvous for the pilgrims going over the isthmus to Mecca, and they return to that place to separate.

BIRKET-EL-KEROUN, or **KOORN** (lake of the horn), a lake in Fayoom, central Egypt, so named from its shape, or perhaps from the shape of the projecting spouts of a castle which stands on its banks; length about 80 m., greatest breadth 6. Its shores are bluff, except on the south side, where they are low and sandy. The lake communicates with the Nile and with the canal which popular tradition ascribes to Joseph the Hebrew. This lake has been supposed identical with the ancient lake Moëris, which has been thought to have been an artificial lake made by a king of that name. But the present Birket-el-Keroun is plainly a natural lake. It abounds with fish, and like Lake Moëris of old, is farmed out to fishermen, and is a source of revenue to the government.

BIRKET-EL-MARIOOT (Mareotis), a lake in lower Egypt, S. E. of Alexandria, once washing the southern walls of that city. It had been dry for several centuries. In 1801, the English united it by channel to Lake Aboukir, in order to obstruct the movement of the French garrison at Alexandria. Mehemet Ali has filled up the channel, and restored the old Alexandrian canal which communicates with the Rosetta branch of the Nile at Fona. It originally communicated also with the Canopic branch of the Nile. It merely left a narrow neck of land between it and the Mediterranean. On this neck Alexandria stood, and the lake served as a port for the craft of the Nile.

BIRMINGHAM. I. One of the most important manufacturing villages of Connecticut, situated in Derby township, New Haven co., on a commanding eminence at the junction of the Housatonic and Naugatuck rivers, 11 m. N. W. of

New Haven. It is neatly laid out, and contains a number of churches and schools, most of which face a handsome public square in the centre of the village. Its growth has been more rapid than that of almost any village in Connecticut: in 1840 it contained scarcely a dozen houses; in 1855 it had numerous manufactories, a bank, and about 2,500 inhabitants. The first pin factory in the United States was established here, and is still in successful operation. Rolling mills for copper, iron, and steel, factories of carriage springs and axles, bolts, augers, well chains, tacks, and other articles; lumber and coal yards, warehouses, and many stores, are among the evidences of the prosperity of the place. The value of the manufactures is about \$1,500,000 per annum. A bridge across the Naugatuck connects Birmingham with Derby, which is a station on the Naugatuck railroad, and the terminus of a line of steamboats plying between it and New York. II. A borough of Alleghany co., Pennsylvania, situated on the S. bank of the Monongahela river, about 2 m. above its confluence with the Alleghany. Although but a suburb of Pittsburgh, with which it is connected by a steam ferry, and a suspension bridge 1,500 ft. long, it has reached the dimensions of a flourishing and important town. It has several churches, and in 1857 had 1 manufactory of iron railing, screws, and machines; 1 of wagons, 1 of glass, 2 of cabinet ware, 1 planing mill, 1 pottery, and 4 breweries. Pop. in 1850, 8,742. The suburb of East Birmingham, with 1,694 inhabitants, adjoins it on the east.

BIRMINGHAM, one of the most important manufacturing towns of England, 112 miles N. W. from London; pop. 282,841. Situated nearly in the centre of England, and in the heart of a mineral district, Birmingham has for centuries been a place of some manufacturing importance. The impetus given in modern times to manufacturing processes by the discovery of steam, and by the improved methods of treating metallic ores, has raised Birmingham to the rank of one of the workshops of the world. It is now the seat of manufacture for every description of hardware and ornamental metal work. Beside metal works, a variety of other fabrics have been introduced, such as india-rubber, papier maché, mother of pearl, and other hard, though not metallic wares. The articles made chiefly come within the class of ornamental and furnishing goods. Outlery and tools never were made to any extent in Birmingham; and of late years, although Birmingham has maintained her position in the productions of goods made of brass and mixed metals, the iron and steel furnishing goods trade has found a favorable site in various towns of the surrounding district. If any one particular fact can, in the history of nations and cities, be assigned as a cause of prosperity or reverse, Birmingham, in common with many other towns of the north of England, owes her modern fame and advancement to James Watt. Watt found a patron for his great dis-

covery in Matthew Boulton, the spirited proprietor of the Soho works, near Birmingham, and became a partner in Mr. Boulton's establishment. Steam, which was, before long, to aid Britain in maintaining her supremacy against the world in arms, had its chief centre at Soho, which became the depot not only for Birmingham wares, properly so-called, but for machinery. Birmingham was the first place to feel the benefit of this accession of strength to the nation. The new power was at once introduced into all the manufacturing processes already established, and their prosperity led the way to an endless succession of inventions and adaptations. During the last 25 years, Birmingham has received a still greater accession of strength and prosperity in the railway system. A railway, "the London and Birmingham," was commenced in 1825, and opened in 1825. This (which is now the centre of the mighty "London and North-western," with its twenty-eight millions sterling of capital) at once concentrated upon Birmingham the traffic of the midland counties with London. Birmingham became the converging point of numerous lines of railways, which joined it with London on the south, with Liverpool and Manchester on the north, and with the east and west of England.—A mere list of the manufacturing processes carried on at Birmingham would require the whole space appropriated to this article. We will only mention brass and bronzed goods of every description, and every variety of excellence, including gas fixtures, stove ornaments, mouldings and cornices, curtain rods and rings, with countless small articles. Mixed metal goods, such as Britannia metal, queen's metal, alabata, and electroplate, including dinner and tea services, spoons, salvers, and similar articles, plated goods which are considered inferior to the plated goods of Sheffield, japanned goods, both flat and hollow goods, papier maché in an infinite variety of articles for household or personal purposes of use or ornament. The elegant designs of these goods, and the fine pictorial ornaments with which the best goods are adorned, have given employment to some excellent artists. Mother of pearl, tortoise shell, and ivory goods, whether used as ornamental accessories, or as the principal fabric of the manufactured articles. Fire-arms in great numbers are made in Birmingham; during the last war, the British government was largely supplied by the Birmingham makers. To these may be added silver goods, thimbles, pencil cases, dressing case furniture, and a variety of small silver articles; small iron and wire goods, steel pens, pins, nails, screws, are also largely made. Castings were formerly very general in the manufacture of Birmingham goods. But the substitution of the die and stamping process, and of thin plates for the solid mass, enables the manufacturers to produce much cheaper and lighter goods. The difference in excellence between the two processes is not in question; the difference in cost

places stamped hollow ornaments within every one's reach. Casting is now almost exclusively confined to heavy goods. These manufactures give employment to large numbers of persons. —The political history of Birmingham is not important. It was an obscure village for centuries. The gradual increase of metal manufactures, for which its contiguity to the mines and smelting works gave it facilities, first called it into notice. The introduction of French tastes, and French ornaments, by Charles II., increased the activity of the Birmingham traders. The town is by no means remarkable for beauty. The public buildings are modern. The town hall, on the model of the temple of Jupiter Stator, at Rome, is a noble structure. It is of Anglesey marble. The hall itself is 145 feet long, 65 feet wide, and 65 feet high, and contains a grand organ, one of the finest in Europe, with 78 draw-stops, and upward of 4,000 pipes. This magnificent instrument, and the convenience of the great hall, bring together in Birmingham musical festivals of the first character. Among the other notable buildings are the royal free grammar school, the Roman Catholic cathedral and college, the school of design, and the market hall. There are several public institutions of an educational character: mechanics' institutes, literary societies, reading rooms, and libraries. It is one of the towns in which a government school of design has been established; and we believe that the Birmingham school is the best attended, and has been most successful. These schools are attended by pupils of both sexes, both juvenile and adults, in separate studios. The public schools are the royal free grammar school, a fine institution, and endowed with about \$40,000 per annum; the blue coat school, and, beside, the ordinary parochial schools. Queen's college, established in 1848, as its name imports, is of collegiate character, and grants degrees in art, laws, or medicine. There is also a college for Independents near Birmingham. There are several hospitals and institutions of a benevolent character; the general hospital, the queen's hospital, a Magdalen hospital, a blind institution, are among the chief.

BIRNAM, a hill in Perthshire, in the western highlands of Scotland, rendered famous by its connection with the history of Macbeth, and immortalized by Shakespeare. It was foretold to the ambitious thane, yet guiltless, except in thought, of bloody ambition, that, until Birnam wood should come to Dunsinane, his life and power could suffer no disaster. On the approach of Malcolm, with the avenging army, composed of the loyal clans, aided by Seward, earl of Northumberland, ignorant of the prophecy, the invaders cut down the boughs and bore them as leafy screens, by which to conceal their numbers, when the report of "the moving forest," marching upon Dunsinane, struck a fatal despair into the soul of the usurper. It has been remarked by an intelligent traveller in the highlands, that, if indeed there ever were a forest

on Birnam, Malcolm did his work of woodcutter very thoroughly; since it is now as bleak a heathery hill as any in Scotland, with scarcely a stunted Scottish pine or two, to mark the relics of the far-famed Birnam wood.

BIRNEE, Old, a town of the kingdom of Bornoo, in central Africa, 70 miles W. of Kookea, on the Yeoo; pop. about 10,000. It is said to have formerly had 200,000 inhabitants. The ruins of the stone walls by which it was enclosed are still visible.

BIRNEY, JAMES G., an American politician, born in Danville, Ky., Feb. 4, 1792, died at Perth Amboy, N. J., Nov. 25, 1857. He studied law, and removed early to Alabama, where he flourished in his profession and held the office of district attorney. Having had his attention turned toward the question of property in slaves, in 1838, he interested himself in the organization of a branch of the colonization society for the state of Alabama. Soon afterward, returning to Kentucky, he organized one there also, of which he became president. But, in 1834, his views rapidly advancing, he espoused the cause of immediate emancipation in a public letter, at the same time emancipating all his own slaves, about 20 in number. Making arrangements to establish a newspaper to disseminate these views at Danville, where he resided, and where he held the situation of professor in the university, he found it impossible to have such a paper printed in Kentucky, and removed to Cincinnati, where he began to issue the "Philanthropist." It had not been long published before it was found no less obnoxious to public sentiment in Ohio than it had been in Kentucky, and the press was thrown into the river. The editor, however, managed to revive it, and, in connection with Dr. Bailey, to make it a powerful instrument in acting upon the opinion of the state. About the year 1836 he went to New York, as secretary of the American anti-slavery society, and for many years devoted his time and strength to the furtherance of the objects of that society, by letters and articles from the press and by public addresses wherever he could make an opportunity to be heard. His purpose was to build up a political party upon the single question of slavery, to act upon the government within the forms of the constitution; and he succeeded in forming an organization in most of the northern states, under the name of the liberty party. During his absence in England, he was nominated in 1840 by that party for the presidency, but met with little success. He was again nominated in 1844, when he received more votes. It was charged upon his friends at the time, that, by withdrawing their votes from Mr. Clay, especially in the state of New York, they accomplished the election of Mr. Polk, thus aiming the death-blow at their own projects. Previous to this, in 1842, Mr. Birney had become a resident of Michigan, where he was disabled, by a fall from his horse not long afterward, from taking the active part in politics to which he

had been accustomed. The latter part of his life was spent at Perth Amboy, N. J.

BIRON. I. **ARMAND DE GONTAUT**, baron, a French general, born in 1524, died July 26, 1592. He was of an ancient family of Perigord, was educated among the pages of Margaret, queen of Navarre, and sister of Francis I., served in Piedmont under Marshal Brissac, distinguished himself during the religious wars in the Catholic army, fighting at the battles of Dreux, St. Denis, and Moncontour, and was created grand master of artillery in 1569. He was suspected by the court and the Guises of a secret inclination to Protestantism, and owed his safety on the eve of St. Bartholomew to his precaution in planting 2 culverins in front of his dwelling. He negotiated with the Huguenots the peace of St. Germain, received the baton of marshal of France in 1577, held various commands in Guienne and the Low Countries, was one of the first to recognize Henry IV., contributed to the victories of Arques and Ivry, and was killed at the siege of Eprenay. He was the godfather of Cardinal Richelieu. II. **CHARLES DE GONTAUT**, duke, son of the preceding, a French general of brilliant reputation, called the "lightning" of France, born in 1562, beheaded in the yard of the Bastille, July 31, 1602. His valor was distinguished at the battles of Arques and Ivry, at the sieges of Paris and Rouen, of Amiens and La Fère, and in the encounter at Aumale. He was made admiral of France in 1592; marshal, in 1594; governor of Burgundy, in 1595; duke and peer, in 1598; and was ambassador to the court of Elizabeth of England and to the Swiss cantons. Of inordinate vanity and ambition, ruined by losses at play and by prodigal expenditures, ungrateful to Henry IV., who had loaded him with favors and even saved his life in the engagement at Fontaine Française, he contrived with Savoy and Spain a plot for the dismemberment of France. His intrigues were discovered by the king, who pardoned him once, and even after he renewed his treason Henry was disposed to indulgence, provided he would confess and repent of his crime. Biron, however, persisting in denying every thing, was abandoned to justice, committed to the Bastille, and speedily judged, condemned, and executed. III. **ARMAND LOUIS DE GONTAUT**, duke, a French general, born at Paris, April 15, 1747, died by the guillotine, Dec. 31, 1793. He bore the title of duke of Lauzun till 1788. Surrounded by every advantage of birth and fortune, with a noble figure and cultivated mind, he passed several years in dissipation in England, Russia, Poland, and France, till he was hopelessly involved in debt. He left his property to his creditors; went with Lafayette to fight for the American revolution; returned to France, was elected deputy for the nobility of Quercy to the states general of 1789; declared against the court, and became the confidant and secret agent of Philippe Egalité. He served the republic in Corsica, Savoy, and La Vendée, but was, nevertheless,

condemned to death by the revolutionary tribunal for having favored the Vendéans, since he had not conquered them. The memoirs published in 1822, under the name of the duke of Lauzun, are of doubtful authenticity.

BIRON, **BIRKEN**, or **BÜHREN**, **ERNST JOHN**, a Russian adventurer, born in 1687, died Dec. 28, 1772. The grandson of a groom, and a groom himself, he found access to the household of Anna Ivanovna, niece of Peter the Great, and became her favorite and lover during her reign in Courland, and residence in Mittan. After Anna became empress, she took Biron with her to St. Petersburg, made him great chamberlain, and heaped honors and wealth upon him. He now adopted the coat of arms and the name of the celebrated French ducal family of Biron. As the favorite of the empress, he ruled absolutely over Russia. The princes Dolgoroucki, who, when Anna was made empress, kicked Biron out of her closet, and made it a condition that he should remain in Mittan, became the first victims of his vengeance. Executions followed each other, and in this manner thousands were murdered. Neither age nor sex was spared. Among his favorite cruelties was that of freezing his victims to death, ordering men and women to be put naked under the spouts of pumps in a temperature of—20° F. and even less. During the reign of Anna, the nobility of Courland, who a few years before had refused to admit his name in the rolls of their caste, frightened by his ferocity, elected him as their sovereign duke, his competitor being the celebrated Maurice of Saxony, the natural son of Augustus II. king of Poland, known as *Marechal de Saxe*, and as the victor in the battle of Fontenoy, who was supported by the interest of his father, and of Louis XV. Named by Anna regent of the empire, and tutor of her nephew and successor during his minority, the ambitious adventurer was suspected of a design to push aside his pupil, and to seize the imperial crown for his own eldest son, marrying him to the grand duchess Elizabeth, daughter of Peter the Great. His reign as regent lasted but a few months. As early as 1740, Field-marshal Münich, once his accomplice, secretly conspired against him, and on the night of Nov. 20, gave orders to seize him in his bed, and to put him in irons. He was shut up first in the fortress of Schlüsselburg, then after his condemnation to death in 1741, and the commutation of this penalty into exile for life, he was sent to Pelim in Siberia, 600 miles beyond Tobolsk, to a prison specially prepared for him by the orders of Münich. The princess Anna, mother of the infant sovereign, was proclaimed by Münich regent of the empire, but was in her turn overthrown in 1741 by Elizabeth, who becoming empress, sent Münich to Siberia, to replace Biron, whom she recalled from his prison and exile. The 2 antagonists, the one returning the other going, met in Kasan while changing post-horses, and exchanged looks but not words. Biron was ordered to reside in the city of Zarskawl.

When Peter III. succeeded Elizabeth, he recalled Biron to St. Petersburg, and Catharine II. subsequently restored to him his forfeited duchy of Courland. On Jan. 30, 1783, Biron entered his capital of Mittau. His rule was just and mild until his death.—He left 2 sons, the eldest of whom, Peter, succeeded to the dukedom of Courland, but having given occasion for discontent, the Courland nobles invoked the interference of Catharine. In 1795 he was obliged to cede his rights to the empress, after which he went to Prussia, where he acquired by purchase several ducal estates, among others that of Sagan. He died on one of his estates in 1800, leaving 4 daughters, one of whom is still known in the elegant aristocratic and political world where she first bore the name of the duchess of Dino, and afterward that of the duchess of Sagan.

BIRR, or **PARSONSTOWN**, a town in King's co., Ireland, 63½ miles from Dublin; pop. 6,886. It has had its full share of historical and military recollections and disasters, from the 9th century to the battle of the Boyne. Near it is Birr castle, the residence of the earl of Rosse, where is situated the celebrated observatory and telescope of that distinguished man of science.

BIRSTALL, a parish of Yorkshire, England, in the West Riding, 7 miles S. W. of Leeds; pop. 36,223. It contains 8 populous townships, and 41 woollen and worsted mills. There are also cotton and silk manufactories, and mines of coal and iron. The York and North Midland railway passes near the place.

BIRTH. The birth of a child is its deliverance from the womb of the mother, in which it had lived some 40 weeks already, without breathing; it is the commencement of a separate existence in the world, in which the infant lives and breathes as other beings of its race and species. The physical organism of man commences its existence in the womb, first as an embryo, which is gradually developed into a fetus; then as an immature corporeal frame; and finally as a mature child, sufficiently developed to be born into the world. At the end of the 39th or the beginning of the 40th week, the child has reached its perfect uterine development, and is prepared for birth into the external world; but various causes incidental to the mother, may precipitate the parturient efforts of the womb, and cause untimely birth; or retard the natural course of labor, and require artificial aid in parturition. There are several kinds of birth, therefore, such as premature, mature, and late; untimely, natural, and artificial; healthy, unhealthy, and irregular; normal, abnormal, and exceptional; and all these complications depend mainly on the health of the mother, although the health and physical conformation of the child may be advantageously or otherwise affected by the influence of the parent on its uterine existence. The period of gestation differs widely in animals of different species; but in each particular species it is fixed by nature with pre-

cision, so that all departures from the natural period of gestation in the human race or any other species of mammalia, are accidental or exceptional phenomena. The 40th week is the natural time of labor for a healthy woman. The child is then mature for birth. Contractions of the womb commence about that time, and give sensations of a somewhat violent nature, which are commonly called "labor pains." The preliminary pangs do not last long, and only give a feeling of unpleasant strain or pressure. The pregnant female seized with these alight pains, may be unable to move for a short space of time; but when the pain is gone, she may feel well again for several hours. These are called "false labor pains," and "premonitory symptoms." After some hours, true labor pains commence. They are more violent, last longer, and return sooner. They are caused by contractions of the womb, and involuntary efforts to expel the foetus. During the period of gestation, the womb grows larger with the growth of the embryo, and at the time of parturition has acquired considerable force and volume. The cervix uteri and the vagina, on the other hand, become relaxed and capable of much distention at that time. The child is enveloped in a double sac of membranes filled with an albuminous fluid, the head downward and the face in front; but, as the uterus contracts above, it forces downward the contents with a sort of spiral movement, causing the child to descend, head first, from the abdominal to the pelvic region, with the back of the head in lieu of the face finally turned in front. The fluid contained in the membranes enveloping the foetus is usually forced out first, with a portion of the sac, forming a sort of bladder, commonly called the "bag of waters," which gradually distends the parts, before the child is born. By repeated contractions of the womb, the bag of waters soon bursts, discharging the contents, diminishing the volume, and allowing the head of the child to occupy the lower space. The bones of the cranium are imperfectly united at this period, and easily yield in various directions, to suit the form of the external parts, as the head descends into the pelvic cavity, and passes through the os tincæ and the opening of the vulva. When the head has passed, the body follows easily and rapidly. Such is the process of a natural birth; and in a healthy state, all parturition would be natural and easy, unattended with much pain, beyond the passing pangs of a few violent spasmodic efforts in the womb, contracting to expel the foetus. There are, however, some exceptions to this natural process, mostly in feeble and unhealthy women. An easy birth occurs in due season, and without much straining effort. A difficult birth proceeds naturally, but with some delay and painful efforts. Instead of terminating in an hour or two, it may be prolonged over 8 or 10 or 20 hours, or more; sometimes even lasting several days, though rarely more than one.

Protracted labors are not always very painful; they are necessary to prepare the parts, in women who are not very young when they give birth to a first child. An artificial birth is accomplished by the aid of instruments or by the hands of the practitioner. Sometimes it is comparatively easy, and without much pain. It is, in fact, mostly intended to facilitate a difficult natural birth. A premature birth is one which occurs some weeks before the natural period; mostly at the end of the 7th month, in lieu of the 9th. Though 40 weeks is the full period of uterine maturity, the human fœtus is completely formed at the end of the 5th month; and there are instances on record of 5-months children living. The birth is called "untimely" when it occurs before the end of the 7th month, and such children can rarely be kept alive. A premature birth, even at the end of 7 months, is very different from a natural birth at the full period. The child does not cry like a full-grown infant, but utters a faint sound, sleeps constantly, and must be warmly wrapped in flannel day and night, or its hands and feet might be immediately chilled, and injured for the rest of life. According as the child, thus prematurely born, is more or less mature in uterine development, the skin is red over the whole body, or sometimes blue, and covered with a fine, long, downy hair, particularly on the sides of the face and on the back. The fontanel is large; the bones of the skull are easily moved; the face is wrinkled and looks old; the eyes are often closed; the finger and toe nails are tender, soft, and very short. The body is very small, weighing but 5 or 6 pounds at most, in lieu of 8 or 10, or more. It is sometimes said, however, that a 7-months child is more easily kept alive than one which is born during the 8th month; but this is not well ascertained. "Late birth" is said to occur after the usual term of 40 weeks, which some believe is possible, while others doubt. There are many causes of deception and mistake in ordinary reckonings of time with pregnant women, who are seldom absolutely sure of the exact commencement of their pregnancy. Sometimes they know exactly, and oftener not. The question is of some interest in medical jurisprudence, where a child born more than 40 weeks after the absence or the death of the reputed father, is to be considered as legitimate or otherwise. Some believe that nature never exceeds 40 weeks' gestation in the human species; while others are inclined to think that she is susceptible of various exceptions to the general law, both with regard to premature parturition and protracted periods of gestation. Abortions and miscarriages are not uncommon. They occur from the beginning of pregnancy up to the 5th month, or later; but mostly during the 8d month. Violent emotions, and shocks of body or of mind, causing sudden revulsions of the nervous system, are the common causes of miscarriage and abortion. Weakly and excitable constitutions

are most liable to these revulsions, which detach the embryo or the partially formed fœtus from the womb, before the time appointed by the laws of nature. Birth may occur, therefore, prematurely, maturely, or later than the usual period. The child may be naturally healthy or unhealthy in the womb; or, if healthy in the womb, it may be injured at the birth by malformation in the mother, or mismanagement in the delivery. Birth may be untimely, or natural, or artificial, where instruments or artificial aid are used in parturition. It may be normal, or abnormal, where the fœtus is well formed in the womb, or undeveloped in its due proportions; and where two or more are born as twins, the case is more or less exceptional; the birth of each one may be difficult, or not, as their positions or presentations are unfavorable or otherwise. Natural birth at the full time is very simple, and fortunately the most common. Difficult parturition requires careful management by an accomplished midwife; and as every variety of accident and difficulty has been well observed and studied, there is little apprehension of unpleasant complication where good advice is sought in time.

BISAYA, a word signifying to tattoo; the name given to the people of that portion of the Philippine archipelago, comprising Samar, Panay, Leyte, Negros, Zebu, Masbate, Bohol, Sibuyan, Ticao, Guimaras, Panamao, and numerous smaller islands. The Bisayans comprise about $\frac{1}{4}$ th of the population of the Philippine islands. The Bisayan language, of which there are 10 or 12 dialects, differing very much in the form of words, is regarded by Spanish and English writers as an original tongue, having no essential affinity with the Malay, or other language of the Indian islands; however, a consultation of the copious dictionary of Father Juan de Noceda, published at Manila in 1841, which contains 2 dialects of the island of Panay, the Hiligueina and Haraya, may lead others, as it has the writer of this article, to arrive at a different conclusion. It has been remarked that the Bisayan language is singularly wordy rather than copious. One illustration of this verbosity in the Bisayan language, is given by Mr. Crawford, the historian of the Indian archipelago, to show the absence of any essential Malay element in the language. To eat is expressed by 40 different terms; to eat generally, *kawn*, which certainly is not far removed from *makan* in Malay; *makumaku*, to eat a little (the Malays often repeat an adjective to express a diminutive, as *kachil-kachil*, very little); *dumum*, to eat greedily, to gorge; and *diyam* or *dium* is Malay for silent; *samung*, to eat by morsels, and *sambung*, is to piece in Malay; *kilau*, to eat raw meat, and *kulih* is skin in Malay; *pahit*, to eat pork; and *fahi*, and *vavi*, are Archipelagian names for pig, derived from the Malay, *babi*; and thus throughout the Bisayan language, there can be traced an essential relationship to the language of the great navigators of the Indian and Pacific oceans.

BISCAY, one of the Basque provinces of Spain, bounded N. by the bay of Biscay, S. by Alava, E. by Guipuzcoa, W. by Santander; area, 1,064 sq. miles; pop. 150,000, including some 5,500 nobles. The surface is irregular; the climate healthy; the soil, though not naturally very fertile, is by cultivation made productive. Fruit, Indian corn, and vegetables are grown abundantly, and of the finest quality. The country is principally divided into small farms, in the hands of the owners, who are frequently the descendants of ancient families. The houses are mostly of stone, and many of the old chateaux and towers have been converted into farm-houses. The iron of Biscay is of the first excellence. It is said that the great mine of Somorostro produces about 40,000 tons annually, though this seems an excessive estimate. The chief occupation of the Biscayans, beside agriculture, is fishery and the coasting trade. The local government is now under the general charge of the captain general of San Sebastian.

BISCAY, BAY or, an extensive bay of the Atlantic, the opening of which extends from cape Ortegal to Ushant. It is about 400 miles wide and 200 miles in length, being nearly semicircular. It is exceedingly stormy and tempestuous; the whole force of the westerly winds is felt, while the recoil of the waves from the coast causes a very heavy sea. A current sweeps round the inside of the bay, known as Rennell's current, which runs sometimes 26 miles per day. The Spanish coast washed by the waters of the bay is bold and rocky. The barren cliffs and frowning precipices of Cape Finisterre are particularly gloomy and grand. There are various small safe harbors on this coast. The French coast is low and sandy as far as the Loire, north of which it is of moderate height. The principal French harbors of the bay of Biscay are Bayonne, Bordeaux, La Rochelle, Nantes, Vannes, and L'Orient. The rivers of the north of Spain, which from the contiguity of the mountain chain to the coast are not of size or importance, find their outlet in the bay of Biscay, which receives from France the Loire, the Garonne, and some smaller streams.

BISCAY, New, in Mexico. See **DURANGO**.

BISCEGLIA, a strongly fortified seaport town of Naples, Terra di Bari, 21 miles W. N. W. of Bari. It is the seat of a bishop, and has a cathedral, 2 monasteries, a hospital, and an ecclesiastical college. The harbor only admits small vessels. Pop. 15,000.

BISCHOFF, GEORG FRIEDRICH, the originator of the German musical societies and Sängerbünde, born at Ellrich in the Hartz, Aug. 21, 1780, died Sept. 17, 1841. In 1808 he was employed by the French government at Erfurt, and appeared with his societies before Napoleon and the other monarchs.

BISCHOFF, THEODOR LUDWIG WILHELM, a German physiologist, born Oct. 28, 1807, at Hanover, was professor at Hackelburg in 1836, and

in 1843 became professor of the school of anatomy and surgery at Gressen, where he founded a museum of anatomy and physiology. He has written several treatises on entomology.

BISCHOFF VON ALTENSTEIN, GNATZ RUDOLF, a German physician, born Aug. 15, 1782, at Kremsnaunster, in Austria, died July 15, 1850. He was professor at Prague and Vienna, and published a work on typhus and nervous fevers in 1815, and also books on chronic diseases, the natural history of man, pulmonary diseases, and poisons. He had a high reputation in all Germany, both as a practitioner and as a medical writer.

BISCHOFSWERDA, a city of Saxony, capital of a jurisdiction of the same name, on the river Wesenitz, having 3,250 inhabitants, chiefly employed in the manufacture of cloths and the preparation of granite building stones. On a neighboring summit is the castle of St. John, which was finished in 1856. Bischofswerda was raised to a city by Benno, bishop of Meissen, in 1076. It has suffered several conflagrations, one of which was by the Hussites in 1429, and another in an engagement between the French and Russians in 1813, but Napoleon gave 100,000 francs as an indemnity. It is the birthplace of the theologian Bahrde.

BISCHOFSWERDER, JOHANN RUDOLF VON, a Prussian statesman, born in Saxony about 1738, died near Berlin in 1803. Under Frederic William II. he had an almost supreme power in the government. As plenipotentiary of Prussia he was at the Congress of Szistowe, and brought together the king and the emperor Leopold at Pilnitz. In 1782, being made a general, he accompanied the king in a campaign, and was subsequently ambassador in Paris till 1794. When Frederic William died in 1797, he received a pension, and was forbidden again to present himself at court.

BISCHOP, NICOLAS, in Latin *Episcopus*, a Swiss printer, born at Weissenburg, near the end of the 15th century. He was learned in the Greek and Latin languages, and having married the daughter and associated himself in business with the son of the famous Jean Froben, undertook to publish at Basel a collection of the Greek fathers, and began the series with the works of St. Basil, in 1529.

BISCHWILLER, a town in France, situated on the Moder, 14 miles N. of Strasburg, pop. in 1856, 7,676. It was formerly fortified, but was dismantled by the imperialists in 1706. Near Bischwiller is situated the rich iron mine of Mittelhardt. Its manufactures consist of woolen and linen stuffs, oil, soap, and earthenware.

BISCUIT, in pottery, the name given to porcelain ware which has been twice baked, but has not received the finishing process of glazing. Many beautiful ornamental articles, as vases, medallions, statuettes, and other imitations of sculpture, are made of this material, and for durability and cleanliness they are to be preferred to the same articles in marble or alabaster. They often possess the translucency of

the finest Parian marble. The most famous manufactories of ornaments in porcelain biscuit are those of Sèvres in France. The work has also been carried to a high state of perfection in England, principally by the ingenuity and industry of Josiah Wedgwood, whose name is still attached to the peculiar varieties of the ware which he introduced. Several kinds of biscuit are produced by his processes, as the porcelain-biscuit, which possesses such hardness, that it is used for mortars for domestic and chemical purposes; the white porcelain-biscuit, also of extreme hardness, and employed for many useful and ornamental articles; the bamboo, or biscuit of the yellow color of canes, and the jasper, a white biscuit of great beauty and delicacy, suitable for cameos and other similar objects.

BISHAREEN, BISHAREE, or BIDJA, the collective name of a number of tribes who inhabit the desert between the valley of the Nile and the Red sea, and skirting the districts of Nubia and Abyssinia. They are nomadic in their mode of life, but not of Arabian descent. Camels, sheep, goats, horses, and asses, are their only wealth. In winter they pasture their flocks on the mountains near the Red sea, where the rain produces herbage in the gulleys of the winter streams, but in summer they are obliged to descend to the Nile. For this privilege of getting grass they pay tribute to the Ababdes. They live entirely upon milk and flesh, which they eat raw. A few of them sometimes visit Derr or Asswan, with senna, sheep, and ostrich feathers. In exchange they take shirts and dhurra, the grains of which they swallow uncooked. They resemble the Ababdes in appearance. Their complexion is dark brown; the dress of both sexes consists only of a sort of shirt. They live in tents covered with the leaves of the doum palm. The Bishareen are constantly armed with the primitive bow and arrow. Their youths make plundering excursions, mounted upon camels of a superior breed. They stand in dread of the Ababdes, who often surprise their mountain encampments. They are hostile toward strangers, and have left unfavorable impressions upon travelers. They are Mohammedans, but do not observe the rites prescribed by the Koran. Very few of them understand Arabic; those who live on the Abyssinian frontier understand the Abyssinian, to which their own language is closely allied. Burckhardt's "Travels in Nubia," is the chief authority concerning them.

BISHARIBA, a people of Nubia, in Africa, more than 200,000 in number, who lead a nomadic life in a desert tract, which they call Edbai, between lat. 23° and 15° N. They are of a dark brown, almost black color, with decided negro features, but of a mild, humane, intelligent, and almost European character. They abide principally around the mountain Elba. The Amarar, to the south of this mountain, is the most powerful of the tribes into which the people is divided. The language of the Bisha-

riba, called the Begania, is spoken from the Red sea to the Nile, and from the southern boundary of Egypt to Suakim, and is wholly different from the neighboring languages. A dialect of it is spoken by the Ababdes, an almost independent nomadic people dwelling further north.

BISHOP (Sax. *biacop*, from Gr. *ἐπισκοπος*, a superintendent), in the Greek, Latin, and Anglican churches, the title given to those who are of the highest order of the priesthood, to the successors of the 12 apostles, in distinction from the priests who are the successors of the 72 disciples; in the Methodist Episcopal and Moravian churches, and in the Protestant churches of Sweden, Norway, and Denmark, it is the title given to the highest officers in the ministry, who are not, however, regarded as a distinct order; in Germany the office is hardly more than titular, and is conferred upon princes as well as ecclesiastics. The name was borrowed by the first Christians from the languages of Greece and Rome, in which it designated a civil magistrate. Thus, Cicero was at one time *episcopus ora campanie*. In the New Testament, the words bishop and presbyter, or priest, are sometimes interchanged, as in Acts xx. 17, 28, and St. John, in his last 2 epistles, adopts the title of priest. Yet, as maintained by Roman Catholic writers, it does not follow because the names priest and bishop were then applied indistinctly, that there existed no distinction between the episcopate and the priesthood. "There might have been confusion in the names," says St. Thomas, "but not in the character." Timothy and Titus exhibited the episcopal type during the life of St. Paul, who charged Titus, in consecrating him bishop of the isle of Crete, to ordain priests in every town, to have over them full jurisdiction, and to be the judge before whom complaints might be established by 2 or 3 witnesses. In the epistles of Ignatius, in the beginning of the 2d century, the episcopate is represented as the divinely appointed pillar which sustains the whole ecclesiastical structure. The bishops preside in the church as the representatives of God, and the priests hold the place of the apostolic senate. Tertullian directs the priests and deacons to do nothing without the consent of the bishop. Cyprian speaks of the bishop as the successor of the apostles, the vicar of Christ, the representative and individual organ of the church, in which he has supreme power, being reponsible to God alone, and yet bound in important matters to receive the counsel of his presbyters. Bishops in the Catholic church are regarded as officers appointed by the Holy Spirit to govern the church of God. The authority which they exercise belongs to their character, and comes from God himself, while the jurisdiction of the priests emanates only from a bishop, and can be exercised only under his direction. Bishops are necessary not only to watch and preside over the church, but also to secure the continuity of the ministry, and to

transmit by ordination the mission which they have received from Jesus Christ. They are all equal in power, because they have all received the fulness of the priesthood, but there are degrees of jurisdiction and honor according to the importance of the sees which they occupy. The principal distinctions which have been introduced are the patriarchs, exarchs, and archbishops, and above all, the bishop of Rome, the pope, around whom all other bishops rally as rays to a common centre. At first, the bishops were elected by the clergy and people of the diocese, but on account of the tumults inseparable from popular assemblies, various councils, from that of Laodicea in the 4th century, to that of Lateran in 1215, restrained and suppressed the electoral rights of the laity. Charlemagne and other of the northern kings appointed, by their own authority, the bishops of their own kingdoms. The pope, unwilling that bishops should be dependent upon princes, brought it about that the canons in cathedral churches should have the election of their bishops, which elections were usually confirmed at Rome. At present the mode of electing bishops varies in different countries. They are elected in some countries by cathedral canons; in others, as in France and Bavaria, they are nominated by the crown or governments. In all cases the names designated are sent to Rome for confirmation, and the person chosen is appointed to his see by letters apostolic. According to the decrees of the council of Trent, the candidate for this order must be of legitimate birth, 30 years old, well reputed for learning and morality, usually a native of the country in which his bishopric lies, and acceptable to the political government thereof. Within 3 months from his confirmation he receives the rite of consecration, which is performed in the cathedral of the new bishop, according to the directions of the pontifical, by 3 bishops appointed for that purpose. The candidate takes the ancient oath of allegiance to the pope, the oath of civil allegiance, subscribes to the confession of faith, receives the insignia of his office, is anointed and solemnly enthroned, and concludes the ceremony with pronouncing the benediction. His insignia are a mitre, the symbol of power, a crosier, in allusion to his shepherd's duties, a finger-ring (*annulus pastoralis*), a sign of his marriage with the church, a cross on the breast, distinctive gloves and sandals, and an official robe. The functions of the bishop embrace all the rites and offices of the Christian religion. He administers 5 sacraments in common with priests, and 2 others, those of confirmation and ordination, are his peculiar prerogatives. He examines and approves or condemns the works published in his diocese concerning religion, and takes part in the general councils convoked by the pope for deciding questions of faith. The guardian of discipline, he makes statutes and ordinances which he judges necessary to the maintenance of it, dispenses with canons according to the canons themselves, judges the

offences of ecclesiastics, and has power of suspension, excommunication, and absolution. There are Catholic bishops who have no dioceses, and who perform duties within limits assigned by the holy see as vicars apostolic. They bear the title of bishops *in partibus infidelium*, because they are assigned to sees which are in the possessions of infidels, and are specially delegated to ecclesiastical duties elsewhere. These were originally bishops, who had been expelled by Mohammedan conquests from their dioceses in the East, and were afterward appointed by the pope as an expression of a perpetual hope and a protest with respect to those conquered sees.—The Protestant movement introduced new conceptions of the church, and changed the form of church government. In the different branches of Protestantism, there was substituted for bishops either the presbytery or ecclesiastical autonomy, or the office of bishop was retained with diminished powers. Only in England has episcopacy been defended by Protestants as a divine institution. Other Protestants affirm its post-apostolic, and therefore human origin. The functions of the Anglican bishop are confirmation, ordination of deacons and priests, consecration of other bishops, dedication or consecration of religious edifices and grounds, administration of the effects of deceased persons till some one has proved a right of executorship, adjudication in questions respecting matrimony and divorce, institution or collation to vacant churches in their diocese, superintendence of the conduct of the priests in the same, and power of suspension, deprivation, deposition, degradation, and excommunication. They are also the medium of communication between the king and people upon matters relating to religion. They are peers of the realm, members of the house of lords, and for the most part richly endowed. Recently, the revenue of the different sees has been reduced more nearly to an equality, and the income of the archbishop of Canterbury has been fixed at £15,000, that of the archbishop of York at £10,000, those of London, Durham, and Winchester at £8,000 each, and the others at from £5,500 to £4,500. The Anglican bishops are nominated by the crown, and then formally elected by the chapters. The ecclesiastical powers of bishops in the Protestant Episcopal church of America resemble those of the Anglican bishops, but they have no political functions. They are elected by the clerical and lay deputies of the vacant diocese assembled in convention, and before consecration are required to produce certificates before the house of bishops, and the house of clerical and lay deputies in general convention. The rights of this office are so restricted in Germany that even Roman Catholic rulers have sometimes been made bishops in the Lutheran church. In Prussia and Nassau this title is ordinarily given to the general superintendents of the Evangelical church. Attempts have been made without success to give this church an episcopal organi-

zation.—The bishops of the Greek church are appointed by the archbishops, and must be selected from the monks, and are therefore always unmarried. They have much less authority than the Roman Catholic bishops.—The bishopric is the district or diocese over which a bishop has spiritual jurisdiction. There are in England, exclusive of the archbishoprics, 26 bishoprics of the Anglican church, 12 in Ireland, and 82 colonial bishoprics. In the United States there are 86 bishoprics of the Protestant Episcopal church, and 87 of the Roman Catholic church. There are 5 bishops in the northern division of the Methodist Episcopal church, and 6 in the southern. Over the entire world there are 560 Roman Catholic bishoprics. See also ARCH-BISHOP.

BISHOP, SIR HENRY ROWLEY, an English musical composer, born in London in 1775, died April 30, 1855. In 1806 he composed the music of a ballet, entitled "Tamerlane and Bajazet," which was performed at the Italian opera house, and, in 1808, that of "Caractacus," a pantomime ballet, at Drury Lane. At this theatre, in the following year, was successfully produced his first opera, "The Circassian Bride," but on the following evening (Feb. 24, 1809) the theatre was burned to the ground, and with it the score of the opera; the duet, "I love thee," alone remaining to show the character of the music. Between that time and 1826, his dramatic engagements of all sorts were numerous, including (to use his own words) "operas, burlettas, melodramas, incidental music to Shakespeare's plays, patchings and adaptations of foreign operas, with glees, ballads, canzonets, and cantatas." During this time he was director of music at Covent Garden theatre, and among over fifty operas which he wrote, the most successful were "Guy Mannering," "The Maniac," "The Miller and his Men," "Maid Marion," "The Slave," "Clari," "The Englishman in India," &c. In 1826, while Weber's "Oberon" was creating considerable sensation at Covent Garden, Bishop's "Aladdin" was produced at Drury Lane, in rivalry. In this, however, having Germanized his style, instead of trusting to his own genius, he did not succeed, and he determined to abandon dramatic composition. He adapted Mozart's "Barber of Seville," "Marriage of Figaro," and some other operas, to the English stage. He was director of the concerts of ancient music for several years, also one of the first directors of the philharmonic concerts, and composed some sacred pieces which were performed at different musical festivals. He succeeded Sir John Stevenson as arranger of the music of Moore's "Irish Melodies." In 1842 he was knighted by Queen Victoria. He had, in 1841, been elected professor of music in the university of Edinburgh, but as residence during a greater part of the year was indispensable, and he did not like to leave London, he resigned the appointment in 1843, about which time he received the degree of doctor of music from Oxford, and, on the death of Dr. Crotch, in 1848,

was elected to the chair of music in that university, which appointment he held until his death. Some time before that took place, his embarrassments were so hopeless and pressing, that a subscription was set on foot among his friends and admirers to relieve them, and sufficient was raised to rid him of his debts. From the same charitable source funds were provided to support and educate his children. Latterly, Sir Henry Bishop's almost exclusive source of income was derived from the "Illustrated London News," for which he arranged a large number of old English airs, to which Dr. Charles Mackay wrote the words. Though Bishop's operas have ceased to be performed, many of the finest songs, duets, and concerted pieces which they contained, are separately known and valued, having been transferred to the concert-room and the chamber. His style was essentially English, devoid of affectation, free, flowing, and harmonious.—Sir Henry Bishop was twice married: first, early in life, to Miss Lyon, a vocalist, by whom he left 8 children; secondly, in 1831, to Miss Anna Riviere, a singer of Bath, many years his junior. Both marriages were unfortunate. The latter, well known as Madame Anna Bishop, left her husband and 8 children in 1840, and made professional tours in the United States, and in Australia, with Signor Bochsa, an accomplished musician, but a man of doubtful character, until his death in 1856. This circumstance cast a cloud over the closing years of Sir Henry Bishop's life.

BISHOP'S CASTLE, a borough, parish, and market-town in the county of Salop, England, 159 miles from London and 20 miles from Shrewsbury; pop. of the parish in 1851, 1,961. It receives its name from an old castle belonging to the bishops of Hereford, which once stood here, but has been long since demolished. The town is an old corporation, and has had 3 charters, one from Queen Elizabeth, the second from James I., and the last from James II. It received from Queen Elizabeth the privilege of sending 2 members to the house of commons, but was disfranchised by the reform bill. It has a church which suffered in the civil wars, several dissenting chapels, an endowed free school, a weekly market, and 6 annual fairs.

BISIGNANO (anc. *Besidlo*), a small town, pop. 3,600, in the province of Calabria Citra, in the kingdom of Naples, about 18 miles north of Cosenza. Bisignano gives the title of prince to the Sanseverinos, and is a bishop's see.

BISLEY, a market-town and parish in the county of Gloucester, England, 96 miles W. of London; pop. in 1851, 4,801. It is intersected by the Gloucester and Bristol railway and the Stroudwater canal. It has a church, an endowed free school, and woollen manufactures.

BISMARCK, FRIEDRICH WILHELM, count von, a German general, born at Windheim, in Westphalia, July 28, 1788. In 1796 he entered the army of Hanover as an ensign, and in 1804 was attached to the Hanoverian legion in the English army. The result of a duel forcing him to

leave the English service, he entered that of the king of Wurtemberg, in 1807, and was soon after appointed captain of cavalry. During the campaign in Russia, he served under the command of Ney, and distinguished himself at the Beresina. He was made a prisoner at Leipsic, but returned to Wurtemberg in 1813. In 1815 he received the title of count; in 1819 he was appointed brigadier-general. In 1828 Count Bismark introduced his system of cavalry tactics into the Danish army, and was soon after appointed commander-in-chief of the cavalry of Wurtemberg. He has published several military treatises, and also a work upon Russia, which he visited in 1829.

BISMUTH, a brittle metal of lamellar texture, a reddish or yellowish white color, and so fusible that it will melt in the flame of a lamp, at a temperature of 476° F. Its specific gravity is 9.73 to 9.82, and its hardness only from 2 to 2.5. It is volatile at high temperatures, and may with difficulty be distilled in close vessels. When melted and left to cool slowly, it crystallizes in cubical forms. Beautiful groups of these may be obtained by first pouring the purified metal into a heated mould, and, letting it cool for some time slowly and quietly, until a solid crust is formed on the surface; then breaking 2 or more holes in this, and pouring out the liquid metal: the cavity left will be found, when cool, lined with the crystals. Bismuth is very easily oxidized, and soon loses its metallic lustre when exposed to the air. The air let in through the broken crust of the melted metal causes a thin, beautifully iridescent pellicle of oxide to be instantly formed over the surface of the crystals. The metal is generally contaminated with sulphur and arsenic, which add to its brittleness. Perfectly pure bismuth is somewhat malleable, particularly when heated. The arsenic is separated by re-melting with 1 part of nitre to 10 of the metal, after the sulphur has been removed by pouring off the liquid metal from the portion which commences to solidify—this containing all the sulphur. Notwithstanding the great affinity of bismuth for oxygen, it is found native, especially in the mines of the Saxon Erzgebirge, at Schneeberg, and in Bohemia, Sweden, and Transylvania. It is also obtained from the sulphuret, found associated with sulphurets of other metals, particularly of cobalt, arsenic, silver, gold, copper, lead, nickel, and tellurium. The treatment of the ore containing the native metal is very simple. Pieces are introduced into the upper end of wrought-iron pipes, which are laid in an inclined position over a fire, and as the metal melts, it eliquates or runs out of the lower end into clay pots, which are set over hot coals to receive it. From these it is poured into ingot-moulds. When other ores of value, as of cobalt, are present, these are obtained freed from the bismuth in the residue left in the tubes, and the extraction of the bismuth is only of secondary importance.—The alloys of bismuth are interesting for their great fusibility,

That called the fusible alloy of Newton has been already noticed under the article **ALLOY**. One composed of 5 parts of bismuth, 8 of lead, and 2 of tin, is still more fusible, melting at 197° F. Safety plugs have been contrived for steam boilers of some of these alloys, which were expected to melt away and let off steam when the temperature became too high for safety; but it appears that after being long exposed to an elevated temperature, they undergo a sort of eliquation, the more fusible alloy melting out, and leaving the remainder much less fusible than it was originally. Even if they remained permanent, it is probable the steam acts too instantaneously in exploding for the plugs to serve any purpose. Though abandoned for this purpose, fusible alloys are useful for making casts for anatomical preparations and other purposes. The alloys may even be poured upon wood or embossed paper, and receive a perfect fac-simile of their form. The manufacturers of fancy soap use it for the moulds of the cakes of soap. It is also an ingredient in type-metal, increasing the fusibility, and causing the alloy to expand and fill the mould perfectly as it cools.—The teroxide of bismuth is the product of the combustion of the metal in the open air. It burns with a faint blue flame, and forms an oxide of a yellow color, which consists of 1 equivalent of bismuth=213, and 8 of oxygen=24. It is also obtained by dissolving the metal in nitric acid, and precipitating by caustic potassa.—The only medicinal preparation of bismuth is that of the subnitrate. This is produced by adding water to the nitric acid solution, and allowing it to stand, that the subsalt may subside. It is a tasteless, heavy powder, of pure white color, and frequently contains arsenic. This, however, does not prevent its being used under the name of pearl-white as a cosmetic for the complexion. In medicine it acts as a tonic and anti-spasmodic, and is used in cases of epilepsy, palpitation of the heart, obstinate diarrhoea, &c. In large doses it acts as a poison, for which the remedies are mucilaginous drinks and bleeding.—Bismuth was not known to the ancients. It was formerly confounded with lead. The first notice of it as a metal was by Agricola, in the year 1529. All the metal now procured for commerce comes from the mines of Schneeberg and Johann-Georgenstadt, and the cobalt works of Saxony. The whole product for the year 1830 was only about 10,000 lbs. Its wholesale price in Europe is from 80 to 40 cents per lb.; imported into England, it is worth \$70 per cwt. Native bismuth is found in Monroe, Conn., also at a mine in South Carolina, and in California.

BISON, a peculiar species of the ox family, of which there are but 3 known varieties. First, the European or Eur-Asiatic species, *Bos urus*, known as the *bonassus*, which is supposed to be the ancient *urus* or *aurochs*, which, in the times of the Romans, abounded in the woody wildernesses of Germany, northern Gaul, and what is now Belgium, Holland, and Zealand. It was known

in those regions so lately as the latter part of the middle ages. It is now nearly extinct, and is found only in the forests of Lithuania. Its distinguishing characteristics are an arched forehead, wider than it is long, short horns attached below the occipital ridge, unusual length of legs, an additional pair of ribs, and the thick woolly hair which covers the head, neck, and shoulders of the male, forming a shaggy beard under the chin. The European bison is an animal of vast power, and is singularly fierce and indomitable.—The second species is the Indian bison (*B. gaurus*). This animal is but partially known and imperfectly described. It has the general characteristics of the bison, the short horns, huge head, unshapely forehead, and the vast masses of shaggy wool covering those parts. It frequents the Ghauts, and the wildest forest ranges of the Himalayas.—The third, and best known variety, is the bison, commonly and erroneously called buffalo, of North America (*B. Americanus*). The peculiar distinction of the American bison is its singular hump over the fore-shoulders; this hump is of an oblong form, diminishing in height as it recedes, so as to give considerable obliquity to the line of the back. The eye is black and brilliant; the horns are black, and very thick near the head, whence they curve upward and outward, tapering rapidly toward the point. The outline of the face is convexly curved, and the upper lip, on each side, being papillous within, dilates and extends downward, giving a very oblique appearance to the lateral gap of the mouth, in this particular resembling the ancient architectural bas-reliefs representing the heads of oxen. The physiognomy of the bison is menacing and ferocious; and no one can see this animal, for the first time, in his native wilds, without feeling inclined immediately to attend to his personal safety. This ferocious appearance is, however, a mere delusion and an outward show, since, of all his species, the bison is the most pacific and inoffensive. Even in his breeding season, when the common domestic bull is not seldom dangerous, when the stag and elk will attack promiscuously whatever comes in their way, and when most animals of any spirit incline to pugnacity, the bison will not attack mankind. The summer coat of the bison differs from his winter dress, rather in difference of length than in other particulars. In summer, from the shoulders backward, the hinder parts of the animal are all covered with a very short fine hair, that is as smooth to the touch as velvet. The tail is short, and tufted at the end, and its utility as a fly-brush is very limited. The color of the hair is uniformly dun, but the long hair on the anterior parts of the body is, to a certain extent, tinged with yellowish or rust color. The shaggy masses of hair, which cover the head, shoulders, and neck of the male, with his great beard, are of a darker shade of the same hue. The sexual season of the bison commences in July, toward the latter end of

the month, and lasts till the beginning of September; after which time the cows leave the company of the bulls and range in different herds. They calve in April, and the calves never leave the mother until they are a year old, while they often follow her until they are 8 years old. From July to the end of December the cows are very fat, and in prime condition; the bulls are always poor, and their flesh is lean and hard; during the breeding season it is rank and positively disagreeable. At this time of the year, the roaring of the bulls on the prairies is like hoarse thunder, and they fight furious battles among themselves. When migrating, they travel in vast solid columns of thousands and tens of thousands, which it is almost impossible to turn or arrest in their progress, since the rearward masses, pressing madly forward, drive the leaders on, whether they will or no; of which habit the Indians take advantage, by driving them in vast numbers over precipices, as a wholesale way of hunting them. The flesh of the bison, the cow especially, is like very coarse-grained beef, but is juicy, tender, and sapid, in the highest degree. The favorite portion is the hump, which, when cooked in the Indian fashion, by sewing it up in the hide, singed and denuded of hair, and baking it in an earthen oven, wherein a fire has been previously kindled, and over which a second fire is kept burning during the process, is considered the most exquisite of dainties; the tongue and the marrow-bones are also greatly prized; and it is too often the case that the American hunter of the prairie, in the very wantonness of epicurism, kills fat cows by the score and hundred, and, only taking the tongues, leaves the carcasses to rot on the plains, or, at the best, to feed the vulture and the wolf. This habit of indiscriminate destruction is rapidly depopulating the continent, its woods, its wastes, and its waters, of the choicest of its natural denizens. Numerous tribes of Indians are almost entirely dependent on the bison for their food, their clothing, their dwellings, and even their fuel; for the dressed hides with the hair on form their robes—denuded of it, the covers of their tents; and their dried ordure—known on the prairies as *bois de vache*—on the vast treeless plains of the West, furnishes the sole material for their fires. The dressed hides are a considerable article of commerce, and for these, as well as for the other causes, or want of causes, described above, the slaughter of these animals is so prodigious, that vast as are their multitudes, they decrease so rapidly that but few years can elapse ere they will be extinct. Their original range appears to have been the whole of the North American continent, west of Lake Champlain and the Hudson river, with the exception of some intervals on the Atlantic sea-board, and south of the Ottawa and Columbia rivers, northward of which its place is supplied by the musk-ox, as is that of the elk and moose by the reindeer. For many years they have ceased to exist to

the eastward of the Mississippi, and every year drives them further and further toward the setting sun, which seems to be emblematic of their future, as of that of the red Indian, the noblest savage man the world has ever produced, who, *pari passu* with the wild herds which were the main support of his people, is travelling the road to total extinction.

BISSAGOS, a group of islands, situated near the mouth of the Rio Grande, in western Africa, between lat. $10^{\circ} 2'$ and $11^{\circ} 55' N.$, and long. 15° and $17^{\circ} W.$ Only 16 of them are of any considerable magnitude. They are inhabited by a fierce and warlike race. Millet, rice, and fruits are raised in great abundance, and the islands produce a singular breed of cattle, with a hump on the back.

BISSÃO, one of the Bissagos islands, situated opposite the delta of the Jéba river, and containing a Portuguese settlement. It is the centre of the Portuguese slave-trade, but has also considerable trade in hides, rice, and wax, and imports English manufactures to the value of \$100,000 annually. Pop. 8,000. Lat. of fort, $11^{\circ} 51' N.$, long. $15^{\circ} 37' W.$

BISSAT, or BISSART, PATRICK, poet and philosopher, born in Scotland in 1500, died at Bologna in 1568, was descended from the earls of Fife. He received his education at St. Andrew's, and after spending some time in the university of Paris, removed to Bologna, where he became professor of canon law.

BISSELL, WILLIAM H., governor of Illinois, born near Cooperstown, N. Y., April 25, 1811. His father, a pioneer settler from Connecticut, gave to his son such an education as his limited means afforded. Going to the common school in winter and teaching a similar school in summer formed the employment of young Bissell till his 17th year, when he commenced the study of medicine and graduated at the Jefferson medical college in Philadelphia, in the spring of 1835. He practised medicine 2 years at Painted Post, N. Y., whence in 1837 he removed to Illinois. Here, in Monroe county, he pursued the practice of his profession with success for several years. He was elected to the state legislature in 1840, and there earned distinction as a forcible and ready debater. Finding his health unable to bear the exposure of a physician's life in southern Illinois, he determined to adopt the profession of the law, and after the necessary studies removed to Belleville, in the county of St. Clair, and there practised law with distinguished success till, in 1846, he was elected colonel of the second Illinois regiment of volunteers for the Mexican war. At this time he held the office of state's attorney for the second judicial district, to which he had been elected by the legislature in the winter of 1844-45. In the execution of this office, in a district which included 9 counties, his powers as an advocate and a lawyer found ample opportunity. In the campaign which included the battle of Buena Vista, however, he became known to the country at large. On his return

home in 1849, he was elected, without a competitor, as representative in congress from the 8th district of Illinois. His first term was signalized by a speech in which he vindicated the merits of his own regiment at the battle of Buena Vista, a subject which was drawn into the debate by an attack made by a Virginia member upon the north and northern troops. He subsequently resisted the repeal of the Missouri compromise, though he had previously acted with the democratic party. He declined a third election to congress in 1854 on account of infirm health. In 1856 the republican party of Illinois, by a unanimous vote in convention, selected him as their candidate for governor, and he was elected by a large majority over 2 competitors, although Mr. Buchanan carried the state against Fremont, the presidential candidate of Bissell's party.

BISSET, JAMES, an artist and writer, born at Perth, Scotland, in 1762, and died at Leamington, Aug. 17, 1832. Previous to his removal to Leamington, he kept in Birmingham a shop for curiosities. He had a wonderful facility for rhyme, and his guide-books and patriotic songs are printed pell-mell mingled with "comic strictures on the fine arts," all of which are written half in rhyme. In 1814 he was appointed modeller to the king. His curiosity shop is said to have contained a unique collection of old furniture, arms, savage weapons, with a strange assortment of old engravings in copper and steel.

BISSET, ROBERT, an English writer, born in 1759, died in 1805, a graduate of the university of Oxford. He was a voluminous writer, and is known in the United States and in England as the continuator of the histories of Hume and Smollet, which he brought down to the end of the reign of George III. His book is accurate, but has little style or eloquence. He was a violent tory, and published in 1786 an essay on democracy and a life of Edmund Burke. He also published a romance called "Douglas," in 4 volumes 12mo. We are also indebted to him for an edition of the "Spectator," with lives of the various contributors and valuable notes. He had a brother who served in the British navy during the wars with the French republic.

BISSEXTILE YEAR, the ancient name of leap year, so called from the 6th day before the calends of March being repeated or taken twice. See CALENDAR.

BISSOLEE, or BISULI, a town of the Punjab, situated 95 miles N. E. of Lahore, on the Ravee. It contains a large palace, resembling an old feudal castle, and a large bazaar.

BISTINEAU, a lake in north-western Louisiana, dividing Bossier and Bienville parishes, about 80 miles in length from N. to S., and 2 in breadth. It receives the Dauchite river from the north, and communicates with Red river by an outlet at its southern extremity. It is navigated by steamboats.

BISTOURY, a surgical instrument for making incisions. According to Huet, the name of this

instrument is derived from that of a town in Italy, Pistoia, or Pistori, formerly renowned for the manufacture of surgical instruments, and more especially the bistoury. It is either straight or curved in form, the blade fixed in the handle or turning like that of a lancet, and varies from the size of a small penknife to that of a large pocket knife, according to the use for which it is intended. It is mainly used to make incisions through the skin, or through membranous tissues.

BISTRE, a reddish brown water-color, generally obtained from the soot that collects in chimney-flues. This is pulverized and washed to remove the saline ingredients. The finest sediment is then dissolved in vinegar, to which gum-water is afterward added. It was formerly much used for making painters' crayons, and also for a paint in water-color designs. Sepia, however, is now preferred to it, as it has a more agreeable color and is more easily employed. In aquatint engravings it is sometimes used upon the plates, the effect being to give the engravings the appearance of original designs.

BISTRITZ, or BISSRITZ, the name of several rivers and places in Transylvania, Hungary, Bohemia, Moravia, Moldavia, and Illyria, of which the 2 most important are: I. A free royal town, pop. 7,000, on a river and in the circle of the same name in Transylvania (the latter called also Besztercze Bideke), called by the Saxon settlers Nösen, or Nösenstadt. It has 8 gates of entrance, 2 suburbs chiefly tenanted by Wallachs, a Protestant church and gymnasium, a Roman Catholic church, gymnasium, and 2 monasteries of Minorite friars and Piarists respectively, and 2 hospitals. Wine, potashes, and cattle-selling are the chief sources of wealth. Near it are the remains of a castle once the residence of the Hunyads. II. A market-town in Moravia, at the foot of the Hostein; pop. 2,900. It has mines of gold and other metals.

BITOHE, a town and fortress of the French department of Moselle; pop. in 1856, 8,297. The fort is on an isolated rock, defending the defiles of the Vosges, with casemates hewn from the rock, and bomb-proof, is well supplied with water, and defended by 90 cannons. The town has manufactures of paper and porcelain.

BITHYNIA, an ancient country of Asia Minor, which was bounded on the north by the Euxine, on the south by Phrygia and Galatia, on the east by Paphlagonia, and on the west by the Propontis and Mysia. That part of Bithynia which adjoined the Propontis and Euxine was often called Bebrycia in the earlier ages, from the Bebrycæ, its aboriginal inhabitants. Homer never styles the people of this country Bithynians, but always Mysians or Phrygians; and Strabo asserts that the Mysians formerly occupied the most fertile portions of it; the Bebrycæ may in fact have been a Mysian tribe. We know not precisely at what period the Bithyni seized on that delightful region to

which they afterward communicated their name, but we can have no doubt as to their original seat. On this point ancient authors are unanimous. Herodotus expressly affirms that the Bithyni came from the banks of the Strymon in Thrace, having been expelled thence by a more powerful horde; and Thucydides and Xenophon corroborate this statement by frequently calling their descendants Bithynian Thracians. The inland inhabitants are sometimes called Bithyni, and those of the coast Thyni. This, however, is a distinction of no importance, for both were still mere branches of one common race. The Bithynians maintained their independence till they were subdued by Croesus, king of Lydia. On the overthrow of the Lydian monarchy they passed under the yoke of the Persians, and their country became a part of the satrapy of Phrygia. In later times, however, it was itself constituted into a satrapy, which the Greek historians and geographers generally style the satrapy of Bithynia, but sometimes that of the Hellespont or Dascylium. After the defeat of the Persians on the Granicus, Bithynia fell under the sway of the Macedonians, who did not, however, long remain masters of it. For during the anarchy which followed the death of Alexander the Great, Botirus, a Thracian chief, crossed the Bosphorus with a strong body of his countrymen, vanquished Calantus, the Macedonian governor, and took possession of Bithynia for himself and his posterity. Nicomedes, the 4th in descent from Botirus, was the first of this dynasty who assumed the title of king, and raised Bithynia to the dignity of a kingdom. This potentate changed the name of Astacus, a Greek city which his ancestor had seized on and made the capital of his principality, to Nicomedia. Here he fixed the seat of his government, and here the Bithynian monarchs continued to reside during the existence of their little state. The kingdom of Bithynia endured for over 2 centuries. Its last king was Nicomedes III., who, having no children, bequeathed his dominions, when dying, to the Romans, 75 B. C. The Romans annexed Bithynia first to the province of Asia, and then to that of Pontus. In the reign of Augustus, however, it was separated from the latter, and, together with the western part of Paphlagonia, was constituted a proconsular province. This arrangement was set aside by Theodosius, who divided the province into 2, giving to the further one the name of Honoricis, and restricting to the nearer one that of Bithynia. Whether they were ever again reunited we are not informed. The inland districts of Bithynia were mountainous and woody, but the country near the coast consisted for the most part of fertile plains, which were studded with villages, and produced wine, cheese, figs, and every species of grain, in abundance. Its chief river was the Langarius, which traversed its territory from south to north. The Bithynians were originally averse to an urban life, and

Bithynia contained in the earlier ages no considerable towns save the Greek maritime cities of Astacus and Chalcedon. But in process of time the case came to be otherwise, and at the period when Theodosius divided the province it contained no less than 5 large and opulent cities, each governed by its own magistrates and laws. The western part of Bithynia is now called Khudawendkiar, and that part contiguous to the Euxine and Bosphorus Kojali.

BITON and CLEOBIA, according to the old Greek tale, 2 brothers, sons of Cydippe, priestess of Juno in Argos. In Herodotus, their story is told by Solon to Croesus, for the purpose of proving that it is better to die than to live. On one occasion (the story runs), the oxen who usually drew the chariot of the priestess not being at hand, these youths, in their zeal, supplied the place of the animals, and dragged their mother in her chariot to the temple, a distance of about 5 miles. Wishing them to be rewarded for their filial devotedness, Cydippe prayed to Juno to grant to her 2 sons what was best for mortals. That night the brothers slept in the temple, and never woke. This was the greatest boon the goddess could grant.

BITONTO (anc. *Bituntum*), a town in the province of Bari, in the kingdom of Naples; pop. 16,250. A victory was gained here by the Spaniards over the Austrians, May 25, 1734, which gave the former possession of the kingdom of Naples.

BITTER PRINCIPLES (also called when evaporated to the consistence of sirup **BITTER EXTRACTS**), substances extracted from plants by digestion in water, alcohol, or ether, and which possess in concentrated form that which gives the bitter taste to plants, and which was formerly referred to a hypothetical substance called the bitter principle. Excepting this, these extracts do not appear to possess other characteristic properties in common; their nature, however, is not very well understood. From some plants the bitter extractive is obtained in white crystalline grains, as the *cetraria*, from the Iceland moss (*cetraria islandica*); sometimes in rhombic prisms, as *asparagin*, from asparagus, and *calumbin*, from the calumba root; and from numerous other plants it assumes the forms of white needles, pearly plates, yellowish white masses, brownish and yellowish red matter, uncrystallizable, in crystals of 4 and 6 sided prisms, and, in the case of the *lupulin*, or *bitter matter of hops*, in powder of reddish yellow color. Some of the numerous varieties of bitter are soluble in water; some only in alcohol or ether. They are generally neutral in their properties, uniting neither with acids nor bases. The bitter extracts are used in medicine as tonics, and also as aperients; and in the manufacture of malt liquors, they are employed to impart their bitter flavor to these. Their presence renders food, particularly that which is of a glutinous nature, more digestible and nutritious; and the action of the stomach,

when impaired by previous disease or exhaustion, is rendered active and healthy, the benefit of which is experienced in the sympathetic action of other parts also of the system. The appetite is improved by their use, and the quantity of blood is increased. These effects indicate the cases in which the use of bitter drinks may be beneficial, as well as those also in which they may prove of serious injury. Their excessive use is liable to induce apoplexy, or palsy, the fate of the greater proportion of malt liquor drunkards.

BITTERN, the bitter, or so-called mother liquor, which remains after the salt is deposited from the briny waters of salt works. The uncrystallizable fluid contains chloride of magnesium, from which the commercial sulphate of magnesia may be prepared by decomposing the salt with carbonate of soda, or with the purified ammoniacal liquor of gas works; the bittern is commonly thrown away as useless. An analysis of a sample from the salt works on the Kiskiminetas river, above Freeport, Penn., is given by M. H. Boyé, M. D., in the "American Journal of Science," 2d series, No. 19, as follows:

In 100 parts of the water.	
Chloride of Potassium,	0.138
Chloride of Sodium,	0.877
Chloride of Calcium,	24.640
Chloride, with } Magnesium,	10.146
Bromide and } Iodide of }	{ Mg. 2.575 Cl. 6.886 Br. 0.701 I. 0.0085
Water,	64.209
	100.000

The specific gravity of the liquid was 1.889.—The name is also given to a very bitter compound of quassia and cocculus indicus, used by fraudulent brewers in adulterating beer.

BITTERN (*ardea*, Linn.), a fen fowl, of the order *grallatores*, or waders; family *gruidæ*, or allied to the cranes; genus *ardea*. There are several varieties of this bird, which is nearly allied to the herons, in Europe, the most common of which, the English bittern, is famous for the peculiar nocturnal booming sound which it emits in the deep watery morasses of which it is an inhabitant, to which sound it owes several of its provincial names, as the bog-bumper, mire-drum, &c. The noise is very peculiar, and can hardly be mistaken when once heard; the popular impression is that the bird, when making it, thrusts its long bill into the mud, and forces its voice through that medium and the superincumbent water; but, like most popular impressions on natural history, it is utterly unfounded. In the United States there are 3 varieties of the American bittern: *A. minor*; the green bittern, or green heron (*A. virescens*), very common in all inland streams and mill ponds, a beautiful bird, but commonly known by a vulgar and indelicate nickname; and the least bittern (*A. exilis*), an extremely small and beautifully marked little bird. All the bitterns are handsome birds, with long necks, which they hold proudly erect, fine pendulous but erectile crests, a long fringe of fea-

thers on the neck, mottled with yellow, brown, and black, like tortoise shell, and all their upper parts variegated with black, brown, rust-colored, yellow, and white, like those of the woodcock. Their long legs are bare far above the knees, to enable them to wade into deep water, in pursuit of their fishy and reptile prey. They have a fine, clear, penetrating eye, with a fearless, defying look, which well expresses their bold and self-relying character. If wounded or broken-winged, they will fight bravely with their sharp-pointed bills, striking at the eyes either of men or dogs, to the latter of which they are formidable antagonists. Their voice is a harsh *qua-ak*; their flight slow and heavy, with their long legs outstretched behind. Their habits are nocturnal; their haunts, fresh-water pools, stagnant rivers, and morasses; they build, like the heron, in trees, ordinarily raising 2 young ones. Their food is small fish, lizards, frogs, and frog spawn, of which they are voracious consumers. They are good eating in September, when the first frosts are commencing, and are eaten roasted, with currant jelly and stuffing, like the hare, which they somewhat resemble.

BITTOOR, BITHOOR, or BRITTOOR, a town of Bengal, province of Allahabad, on the Ganges, 12 miles N. W. of Cawnpore; pop. 18,580. As a military post it is of little consequence, but as a religious city it enjoys high repute, and every year in November and December is the scene of a festival wherein piety and traffic are curiously intermingled. Beside a number of Hindoo temples it has magnificent ghats, or flights of steps, on the brink of the sacred river where the priests and worshippers of Brama perform their prescribed ablutions. One of these ghats is held to have been honored by the presence of Brama himself, who there sacrificed a horse after creating the universe. A pin fixed in one of the steps and firmly believed to have dropped from the god's slipper on that occasion, is still an object of deep veneration. For a long period this town was the residence of the chiefs of the Mahrattas, the last of whom died without issue in 1851. His estate then reverted to the East India company, to the exclusion of the claim of an adopted son, Dhundoo Punt, who was, however, permitted to occupy the town, and is best known as the rajah of Bittoor, or by his title of the Nena Sahib. It is to the fearful interest which centres in this man, as a leader of the sepoy mutineers in 1857-'58, that the place now owes its chief celebrity. In June and July, 1857, 2 parties of Europeans, mostly women and children, who had escaped down the river from Furruckabad or Futtehghur, are said to have been captured by him opposite Bittoor and put to death. In July, Gen. Havelock drove the Nena from the town and dismantled it; it was subsequently reoccupied by the mutineers, and after a well-fought battle again taken by Havelock, Aug. 16, 1857.

BITUMEN, a generic name for a variety of substances found in the earth, or exuding from

it upon the surface, in the form of springs. The liquid varieties become inspissated by exposure, and eventually harden into the solid form, which is asphaltum. The bitumens burn with a flame and thick black smoke, giving out the peculiar odor called bituminous. Some of the impure fluid bitumens, and the solid variety when melted, closely resemble coal-tar. They are distinguished from bituminous coal in giving no ammonia, or mere traces of it, by distillation, and in developing negative electricity by friction without being insulated; also when ignited upon a grate, the bitumens melt and run through at the temperature of about 220° F., but the coals burn to ashes. In melting, volatile fluids escape from them with no swelling up other than that due to ebullition. This property of dividing by heat into fluids and solid residues having a porous form, assimilates the bitumens to ordinary turpentine and tar, and renders them unsuitable for producing gas economically. In boiling water the bitumens soften, adhere to the sides of the vessel, and give off naphtha; coal undergoes no change. The bitumens, again, dissolve perfectly in spirits of turpentine, benzole, rosin oil, linseed oil, and sulphuric ether; while coal, after long digestion in the oils, only colors the liquid brown, and to the sulphuric ether imparts a naphtha-like fluid and a resinous body. The bitumens decompose nitric acid, coal does not; they combine with sulphuric acid, coal is not affected by it. Dropped upon melted tin, temperature 442° F., the bitumens decompose and give off copious fumes; coal is unaltered. Most of these points of difference were given in evidence by Dr. A. A. Hayes and Dr. O. T. Jackson of Boston, in an important suit tried in New Brunswick, to test the title to the Albert coal-mining property, this turning on the point whether the product was coal or asphaltum. Dr. Ure notices that the fluid bitumens differ from the coal-tar in not producing the 6 substances extracted from the latter by Mr. Mansfield, and named by him alliols, benzole, toluole, camphole, mortuole, and nitro-benzole.—The varieties of bitumen commonly described are: the liquid oil, naphtha, or in its more impure form, *petroleum*; the viscid pitchy bitumen, which passes into the black resinous *asphaltum*; and the elastic bitumen, or elaterite of the mineralogists. The last is also called mineral caoutchouc, from its property of rubbing out pencil-marks. It was first found in the deserted lead mine of Odin, in Derbyshire, by Dr. Lister, in 1672, and was called by him a subterranean fungus. It occurs in soft flexible masses of blackish brown colors and resinous lustre, and consists of about 85 per cent. of carbon, and the remainder hydrogen with probably some oxygen. Compact bitumen or asphaltum has already been noticed; see ASPHALTUM. Further consideration, however, will be given to it in this article in treating of the uses of the bitumens. *Chapapote* is an asphaltum found in abundance near Havana, and elsewhere in the island of Cuba. It appears to be a consolidated petroleum, a

liquid variety of which is often seen near it oozing through the fissures of the limestone rocks. The solid product is of jet black color, and gives a brown powder, and a strong but not unpleasant odor. Its specific gravity is given by Dr. Hayes at from 1.165 to 1.170. It melts in boiling water into a thick liquor, and forms a scum upon the surface. Alone, it melts at 214° F. into a uniform fluid, which may be poured from one vessel to another; calcined in close vessels, it swells and leaves a very light coke; dissolved in spirits of turpentine, it makes a coarse varnish. Brown colored and viscid oils are extracted from it. Petroleum and naphtha are fluid substances, called also rock oil, which flow up through fissures in the rocks, and collect in low places, and are found floating upon the surface of the waters of lakes. When indurated and oxidized by exposure, they are asphaltum. The purer form, called naphtha, is very common in many parts of the world, and in numerous places is turned to good account as a fuel, and also for illumination. On Oil creek, Venango county, Pennsylvania, it was formerly collected by the Seneca Indians, and sold by the name of Seneca or Genesee oil. Similar springs are well known in Chautauque, Erie, Cattaraugus, and Seneca counties of New York. Carburetted hydrogen gas issues with the oil, and this is so abundant that the town of Fredonia, in the first-named county, is lighted with it, and it affords the illuminating gas for the light-house of Portland harbor on Lake Erie. At Rangoon, in Burmah, there are upward of 500 naphtha wells, from which 412,000 hogheads of oil are annually obtained. This interesting form of bitumen will be more particularly described, and more localities cited, under the article NAPHTHA. These different varieties of bitumen are found only in the secondary and tertiary formations. If they occur at all in the primary rocks, it is merely in veins and fissures, which probably have been filled long after their formation. They are very generally met with in connection with salt springs, or mines of rock-salt. Near volcanoes, petroleum is often seen issuing with the waters of springs, or floating upon the sea, furnished from springs at its bottom. The ancient Babylonians obtained the imperishable cement for their structures from the fountains of Is, which is the modern Hit, on the right bank of the Euphrates. These still continue to pour out inexhaustible supplies, mingled with the strongly saline and sulphurous waters. Common salt is also prepared here from the brine springs. The water of the springs has a temperature of about 160° F. As it flows slowly along a conduit, the oily bitumen gathers on the surface, and is skimmed off and laid in pits exposed to the air, in which it speedily hardens into flakes of about an inch thick, which are sold at Hit for about 5 cents the cwt. It is much used for covering the houses and boats of the region. The rock formation is an argillaceous limestone, over which is found in some places a coarsely granu-

lar gypsum. These fountains are celebrated as having attracted the attention of Alexander the Great, Trajan, and Julian. The bituminous products of the Dead sea in Judea have been referred to in the article ASPHALTUM. They are collected on the east and west sides of the lake, and are supposed to be derived from a bed of bitumen at the bottom. The pieces resemble pitch, and though one-seventh heavier than pure water, float upon the saline water of the Dead sea, the specific gravity of which is 1.23. They melt in boiling water, and when distilled yield a volatile oil, some water, and traces of ammonia. The residue consists of charcoal, amounting to $\frac{1}{4}$ of the weight of the asphaltum,—its ashes composed of silica, alumina, oxide of iron, and traces of lime and manganese. It is from this locality the name Jews' pitch has been given to asphaltum.—In the island of Trinidad, in the West Indies, there is a famous lake of asphaltum and petroleum called Tar lake, or by the French *Le Brai*, from its material answering the purposes of pitch, and possessing this additional advantage, that it keeps off the teredo or borer, which in warm climates is so destructive to the timber of ships. This is described by Manrosa, an American who visited it, as being about $\frac{1}{4}$ of a mile back from the sea, separated from it by an elevated tract of land, the surface of which is covered with hardened pitch, upon which trees grow. About Point Le Brai the masses of pitch appear like black rocks among the foliage. The lake seems to be about a mile and a half in circumference. It is underlaid by a bed of coal. Near the shores the bitumen is solid and cold, appearing as if it had cooled from the liquid when boiling up in large bubbles. Toward the middle of the lake the temperature increases, the bitumen becomes softer, and in the centre is boiling. The English authorities describe the lake as of circular form, and 8 miles in circumference; they say nothing of the coal-bed nor of the lake boiling in the centre. It appears at a distance like water, but near by like a lake of glass. In approaching, a strong sulphurous smell is perceived at the distance of 8 or 10 miles. When the weather is hot and dry, the surface of the lake is so soft and sticky one cannot walk upon it. A foot below the surface it becomes softer, and contains an oily substance in little cells. Specimens of this bitumen, which were regarded as pure, and taken to Europe, were examined by Mr. Hatchett, who found them to consist of a porous and argillaceous stone thoroughly impregnated with bitumen. It does not burn readily, but becomes plastic by a slight increase of temperature. Bitumen is also found disseminated through calcareous and sandstone rocks, and saturating slates and shales. Nearly all the varieties of it are liable to have many impurities mixed with them, and all contain volatile oils and water. The bitumens are purified by first boiling them with water. The sand and other mineral substances fall to the bottom, and the bitumen

floating or sticking to the sides of the boiler is skimmed off and put into another boiler, by which more water is separated. It is then boiled by itself for some time, and is entirely freed from water and oils and the solid impurities, which subside to the bottom. It is thus obtained in the form of a thick fatty pitch, ready to be barrelled for the market or applied to its uses.—The results of the ultimate analysis of the pure natural bitumens, whether liquid or solid, vary but little from 88 per cent. of carbon and 12 of hydrogen. A solid bitumen of Coxitambo, near Cuenca in Ecuador, gave 88.7 per cent. of carbon, and 9.7 of hydrogen, with 1.6 of oxygen and nitrogen. Nitrogen is usually present to the extent of a trace, and in the solid asphaltum it has been found to the extent of 12 per cent., and oxygen also in the same variety about 8 per cent. By treating asphaltum with different solvents, three distinct bodies may be separated. Water dissolves nothing. Anhydrous alcohol dissolves a yellow resin equal to $\frac{1}{10}$ of the weight of the asphaltum; this is soluble also in ether. The residue insoluble in alcohol, treated with ether, yields a dark brown resin, which is separated by evaporating the ether. It amounts to $\frac{1}{10}$ the weight of the asphaltum. It dissolves easily in volatile oils, and in oil of petroleum. The latter also, as well as turpentine oil, takes up the residue which the ether leaves.—The following formulas, exhibiting the composition of petroleum and asphalt, are given by Dr. Muspratt, as setting forth in a striking manner the derivation of the latter by oxidation of the former:

Naphtha, or Petroleum..... $C_{10} H_{16}$, or $C_{10} H_{12}$
 Asphalt, or Bitumen..... $C_{10} H_{12}$, or $C_{10} H_{10}$

Great expectations have been entertained of the important uses to which the natural bitumens might be applied; and in France, particularly, where several qualities of asphaltum are found, there appears to have prevailed quite a speculative fever in introducing those substances to a great variety of purposes in the arts and manufactures, so that her large cities and capital have been spoken of as museums of asphaltic appliances. Though this excitement soon subsided, and the use of asphaltum was abandoned for many of the purposes proposed, it was proved to be admirably adapted for the construction of walks, terraces, roofs, and every kind of hydraulic work. The great Place de la Concorde is covered with a beautiful mosaic asphaltum pavement, and many of the promenades on the Boulevards with a clean thin bed of bituminous mastic; beside these, a great number of other public places have been similarly covered. As is well remarked by Dr. Ure, in treating of this subject: "It is a singular fact in the history of the useful arts, that asphalt, which was so generally employed as a solid and durable cement, in the earliest constructions upon record, as in the walls of Babylon, should for so many thousand years have fallen well-nigh into disuse among civilized nations." Its use

being recommended in the highest terms by this and other authorities, as preferable to that of coal-tar, which in this country has entirely superseded the employment of the natural asphaltum, it is well to give more consideration to this subject, than it would seem otherwise to require, particularly as in Cuba and Trinidad there are such large repositories of it, conveniently situated for its importation. It appears that in England several attempts have been made to construct carriage-ways of asphaltum and gravel, and the failure of these attempts has thrown discredit upon all uses of the kind for this substance. Now, it is not probable that it will prove a suitable material for the pavement of crowded thoroughfares; and, moreover, for whatever purpose it is used, it should be laid in dry weather, and be previously thoroughly prepared by boiling it for some time to expel all the water and volatile oils, both of which impair its useful properties, by causing it to crack. Neither of these requisites appears to have been regarded in the London attempts. The material most successfully employed in France for producing the bituminous mastic, is liquid bitumen mixed with a bituminous limestone, which is ground to powder, sifted and stirred into the boiling asphaltum, four parts of the stone to one of the bitumen. Dry, common limestone, or broken bricks, will answer as well. The mixture, when of homogeneous consistency, is poured out upon a table covered with sheets of paper, and upon which a square frame is placed for receiving the sheets of mastic. It is spread smoothly by a heated iron roller, sprinkled with sand, and left to cool. When laid, they are united by soldering with a hot iron. Coal-tar is often substituted for the natural bitumen, but it is considered far inferior to it in durability and strength. Dr. Ure says of them: "Factitious tar and pitch, being generated by the force of fire, seem to have a propensity to decompose by the joint agency of water and air, whereas mineral pitch has been known to remain for ages without alteration." The bituminous limestone is found at Val de Travers, in the canton of Neuchâtel, in the Jura limestone formation, corresponding to the English oolite. It consists of 80 per cent. carbonate of lime, and 20 per cent. of bitumen. It is tough, difficult to break with a hammer, and is excavated by blasting. Slightly heated, it exhales a fragrant odor, quite different from that of the factitious compounds. The carbonate of lime is so protected by the bitumen, that it does not effervesce with muriatic acid. In any artificial mixture it would be impossible to produce so intimate a combination of these substances, as is found in this natural asphalt rock. Silicious matters, as sand and smooth pebbles, are not so well adapted for the preparation of durable mastic as calcareous substances, as they have little attraction for the bitumen, and the mixture is liable to crack and crumble. Bitumen is also applied in the form of an external coating of mastic to give strength and protection to thin sheet-iron pipes and glass

tubes used for conveying water. To some extent asphaltum may be used as a fuel, especially for heating meters in gas works. It appears to have been a principal ingredient in the destructive Greek fire. (See FIRE, GREEK.) Bricks of poor quality saturated with it are rendered strong and impervious to water. It answers most of the purposes for which coal-tar is used. It makes the strongest cement for laying brick and stone work. The ancient Egyptians used some form of it for embalming bodies. The hardness of the mummies is probably owing to the combination of bitumen with the animal substances. It is useful for lubricating machinery and carriage-axles. Petroleum affords an oil and paraffine, and an English patent has lately been granted for a method of extracting them. In France a process has been patented for spreading fluid bitumen upon canvas sheets or netting, and passing it between metallic rolls, thus coating the cloth on one or both sides, and to any desired thickness. The use of the material is for lining buildings. In medicine, petroleum is employed as a sudorific and antispasmodic, and mixed with asafoetida it is a remedy for the tape-worm. It is applied externally for chilblains, cutaneous affections, chronic rheumatism, and affections of the joints. It is an ingredient in British oil. The Seneca oil was much used for an external application. Combined with soap, it gives to it an emollient property, which is very agreeable in hot climates, and, indeed, acts beneficially upon the skin in all climates. In the mechanical and chemical uses of the bitumens, it is likely we have yet much to learn; and it is probable that this substance will hereafter be much more advantageously employed for many purposes than we now have any idea of.—The origin of the bitumens has been regarded as very doubtful. Their composition would seem to refer them to vegetable matters, though they possess very marked differences from the coals. Their properties, however, may be changed by the different influences to which they have been subjected, and particularly to those of heated waters long acting upon them under great pressure, and combined with various saline bodies. They are often found in regions subject to earthquakes and volcanic action, and the causes that produce these must have unknown effects in modifying the bodies of mineral coal or vegetable collections they may come in contact with.

BITUMINOUS SHALE, a soft variety of argillaceous slate, found usually associated with coal. It contains a variable proportion of bitumen, sometimes so much of it, that it will burn. In Mansfeld, Germany, the bituminous schist found immediately over the new red sandstone contains also a small quantity of copper pyrites, and though it yields only $1\frac{1}{2}$ per cent. of metal, it is made to pay a profit by the ore furnishing its own fuel for reduction. It is proposed to substitute it for animal black, in removing by its bleaching properties the colors of sirups,

it being composed, like bones, of an earthy and an organic constituent, and yielding a similar charcoal.

BITZIUS, ALBERT, a popular Swiss author, better known under the pseudonyme of "Jeremias Gotthelf," born Oct. 4, 1797, at Morat, in the canton of Freyburg, died Oct. 22, 1854, at Lützelflüh, in the Emmen valley of the canton of Bern. In early life he officiated as pastor in Bern, and for some time took part in politics, but from 1837 till his death he devoted himself exclusively to literature. His writings consist chiefly of tales descriptive of the home life of Switzerland. A complete edition of his works in 12 vols. is in course of preparation at Berlin. Some of his tales are especially intended to illustrate the horrors of drunkenness, while others describe the results consequent upon a defective education. He was also the author of several popular almanacs.

BIVALVE (Lat. *bis*, twice, and *valva*, flap), a term in conchology, applied to shells which are composed of 2 valves, as the oyster, clam, &c. In botany it is applied to the seed-vessel, when this opens into 2 parts.

BIVERI, **BIVIERE**, or **LENTINI**, a lake of Sicily, 17 miles W. N. W. of Agosta. It is 19 miles in circumference, but during the heat of summer the greater part of it becomes a mere swamp. Its waters abound with eels, mullets, and other fish, in taking which 50 or 60 boats are constantly employed.

BIVOUC (Fr., probably from Ger. *bei* and *wache*), an encampment of troops by night in the open air, without tents, each soldier sleeping in his clothes, with his arms by his side. In the warfare of the ancients, the troops were protected by tents, as by movable cities. In mediæval times, castles and abbeys were opened to feudal and princely armies as they marched by. The popular masses who, impelled by religious enthusiasm, precipitated themselves into the crusades into Asia, formed rather a mob than an army, and all but the leading knights and princes and their immediate followers bivouacked upon the ground, like the wild nomadic tribes who roam the plains of Asia. With the return of regular warfare tented camps again reappeared, and were common in Europe during the last 2 centuries. But in the gigantic Napoleonic wars it was found that rapid movements were of more importance than the health of soldiers, and the luxury of tents disappeared from the fields of Europe, excepting sometimes in the case of the English armies. Entire armies bivouacked around fires, or, if the neighborhood of the enemy rendered it necessary, without fires, sleeping upon straw, or perhaps upon the naked ground, a part of the soldiers keeping guard. Among historical bivouacs none has been more celebrated by poetry and painting than that of the eve of the battle of Austerlitz.

BIXIO, JACQUES ALEXANDRE, a French politician, born in 1808 at Chiavari, in the department of the Apennines. He studied medicine,

founded the *Revue des deux mondes* in conjunction with M. Buloz, and produced some agricultural works of repute. In 1848 he was in favor of a regency, and during the evening of Feb. 24 made vain efforts to prevent the decree which proclaimed the republic from being inserted in the *Moniteur*. Two days afterward he took office under the provisional government, and was sent as minister to Turin. Elected to the legislative assembly, he was zealous against the insurrectionary movements of May 15 and June 24. In the latter outbreak he was slightly wounded as he was rallying the soldiers after Gen. Bédan had fallen. Subsequently he was appointed vice-president of the assembly, and was 5 times reelected to that office. When Louis Napoleon became president, Bixio was made minister of agriculture and commerce, but in 8 days he retired. After the *coup d'état* of Dec. 2, 1851, he was kept 8 months in prison, and has not since mingled in public affairs.

BIZERTA, or **BENZERTA**, a fortified seaport in Tunis, on a gulf which communicates with a lake in the interior; pop. 10,000. The harbor was formerly commodious, but is now choked up with sand, and receives only small vessels. The adjoining lake abounds in fish, the roes of which, dried and formed into a substance called *botargo*, are an article of Mediterranean commerce.

RJOERNSTJERNA, **MAGNUS FREDRIK FERDINAND**, count, a Swedish statesman, born Oct. 10, 1779, at Dresden, died Oct. 6, 1847, at Stockholm. In 1793 he went to Sweden and entered the army, where he served in the war with Finland, and in Germany at the battles of Dessau and Leipsic, negotiated the capitulation of Lübeck with Gen. Lallemand, and after taking an active part in the military operations in Holstein and Norway he concluded the convention which established the union of Sweden and Norway. In Oct. 1812, he negotiated at London the sale of Guadeloupe. He was envoy in London from 1828 to 1846. His political opinions were moderate. He wrote a work on the theogony, philosophy, and cosmogony of the Hindoos, and another on the British rule in India.

BJORKO, a Swedish island on the lake of Mälär, 18 miles from Stockholm, with ancient gates, walls, and other ruins, which confirm the current belief that the island is the site upon which formerly stood the flourishing city of Björko.

BLACAS, **PIERRE LOUIS JEAN CASIMIR**, duke de, a French statesman, born Jan. 12, 1771, at Aulps, died at Göriz, Nov. 17, 1839. At the commencement of the revolution he emigrated, and returned to France with Louis XVIII. Sent to Rome as ambassador, Blacas negotiated the concordat of 1817. In 1820 he refused to be made prime minister. When Louis Philippe became king of the French, Blacas returned to exile and offered Charles X. his fortune.

BLACK. A substance is said to be black

when no color is reflected from its surface, but all the colors are absorbed.

BLACK, ADAM, a Scottish publisher, born in Edinburgh in 1784. In conjunction with his brother Charles, he established the publishing firm in Edinburgh, which for many years rivalled the establishments of Constable and Blackwood, and still continues in high repute as publishers of Sir Walter Scott's works, of the "Edinburgh Review" (in conjunction with the Longmans of London), and the "Encyclopædia Britannica," to the 8th edition of which Mr. Black has contributed several articles. He held and avowed liberal opinions at a time when they were unfashionable, and assisted to secure their triumph, very warmly joining in the movement to secure parliamentary and municipal reform. He was elected twice to the office of lord provost of Edinburgh, which he occupied from 1843 to 1848. During a visit to England, while holding that position, he declined the honor of knighthood, which was offered to him by the queen at the suggestion of Lord John Russell. In Feb. 1856, on the final retirement of Mr. Macaulay from the representation of Edinburgh, Mr. Black was unanimously chosen to succeed him, and was reelected in 1857, without opposition. As a legislator he has supported Lord John Russell's education bill of 1856, and advocates parliamentary reform and the vote by ballot. He is decidedly opposed to all religious endowments by the state. Mr. Black, though a good speaker, is rarely heard in the house of commons.

BLACK, JEREMIAH S., United States attorney-general under President Buchanan, born Jan. 10, 1810, in the Glades, Somerset co., Penn. At 17 years of age he entered the law office of Chauncey Forward, in Somerset, an eminent member of the bar, and was admitted to the courts in 1830, being still in his minority. In April, 1842, he was appointed by the governor president judge of the judicial district in which he resided, and confirmed by the senate upon a strict party vote. In 1851, when a change in the state constitution made the judges elective, he was nominated as judge of the supreme court by the democratic convention, before which he was not a candidate. Of the 10 candidates named by the 2 parties, he obtained the largest popular vote. Under the mode of drawing provided by the constitution, a 3 years' term was assigned to him, and he became chief justice of the court. In 1854 he was reelected to this place, by a majority of 47,000 votes, though the candidate for governor on the same ticket was defeated by 37,000. On March 5, 1857, while engaged in the discharge of his judicial duties at Philadelphia, he received a telegraphic despatch from President Buchanan, tendering him the appointment of attorney-general of the United States. He has since appeared on behalf of the government, in a disputed land claim from California, involving an important principle upon which hundreds of similar cases depended. He achieved a great success, at once

establishing his reputation as a jurist with the court and the bar.

BLACK, JOHN, a London journalist, born at Dunse, in the county of Berwick, in 1788, died June, 1855. He received the ordinary Scottish parochial education, and commenced active life at the age of 14 in his native place, as errand boy. In his 18th year, he removed to Edinburgh, where he struggled for several years, chiefly as writing clerk in a lawyer's office. He taught himself Latin, Greek, and French, and also acquired German and Italian. In 1810, at the age of 27, he arrived in London, with 8 half-pence in his pocket, having walked the whole way from Edinburgh. He had a letter to Mr. Perry, of the "Morning Chronicle," who engaged him first as a parliamentary reporter, and, soon after, as translator of the foreign journals. In 1819, 2 years before Mr. Perry's death, Mr. Black rose to the position of principal editor of that journal, in which his fearlessness, tact, probity, and general knowledge were largely available. When the "Morning Chronicle" was sold (in 1823 to Mr. Clements, and to Sir John Easthope in 1834), Mr. Black was continued as editor, and retired in 1844. He was then in such distressed circumstances, that he was compelled to sell his large and valuable library, the collection of over 80 years. The leaders of the liberal party, whose opinions he had devoted his life to advocating, subscribed enough to purchase him an annuity, on which he lived in easy circumstances, until his death. Mr. Black, whom Cobbett delighted to call "the Scotch feelosopher," was a heavy political writer, fond of filling his articles with long extracts from old books, and fully persuaded that his duty as a journalist was to write all the "leaders" himself. Latterly he had the assistance of many able writers. Indeed, while the "Chronicle" was in Mr. Perry's hands, almost every "old whip" of note occasionally contributed to it. Mr. Black never wrote an original book, but translated Humboldt's work on New Spain, Leopold's "Travels in Norway and Lapland," Goldoni's "Autobiography," and Schlegel's "Lectures on the Dramatic Arts and Literature."

BLACK, JOSEPH, a Scotch chemist, born of Scotch parentage at Bordeaux, in France, in 1728, died in Edinburgh, Nov. 26, 1799. He was sent in his 12th year to prosecute his studies at Belfast, and 6 years later to the university of Glasgow, where he displayed a fondness for physical science, selected the profession of medicine, and became the favorite pupil of Dr. Cullen, under whom he made great progress in chemical studies. Physicians and chemical professors were at that time discussing the cause of the causticity of lime and the mode of its action as a lithontriptic medicine, and Mr. Black, as the assistant of Dr. Cullen in his chemical operations, began to make experiments upon this subject, which he continued with ardor after his departure to the university of Edinburgh, where he took his medical degree

in 1754. It had formerly been supposed that quicklime held in absorption some igneous particles or something of an igneous character, but the investigations of Black led him to the discovery that the causticity of the calcareous earths was not derived from any combination, but was their peculiar property, and that they lost this property when they combine with a certain portion of air, to which he gave the name of fixed air, but which is now known as carbonic acid gas. This discovery, which forms an era in the history of chemistry, and opened the way for the experiments of Priestley, Cavendish, and Lavoisier, was stated and explained by Black in his dissertation when he received his medical degree. Dr. Black was invited in 1756 to succeed Dr. Cullen at Glasgow, the latter having removed to Edinburgh, and in this position he made his second and most important discovery. Ice, he observed, being converted into water, absorbs a large amount of heat, the existence of which is no longer indicated by the thermometer. Water being converted into vapor absorbs another large amount of heat, which is in like manner lost to the senses or the thermometer. To change a solid into a fluid, or a fluid into a gas, a quantity of heat has to lose its existence, as it were, in the newly created state of the body. On the other hand, heat is given out when a gas is liquefied, or a liquid solidified; that is, the heat which was apparently lost when the solid was made a liquid, becomes sensible again when the liquid is made a solid; and the same is true, also, of the change from a gas to a fluid. Thus a freezing process is always a warming process to the things which are nearest it, because the heat which was lost in the fluid is let loose when the solid is formed. On the other hand, a melting process is always a cooling process to the things in the neighborhood, because to melt a substance a large amount of heat has to be sacrificed, and this heat is abstracted from the nearest bodies. Thus, on a sunny spring day in the north, when the snow is melting, there is always a raw chill in the air, because the heat is constantly taken out of the air to change the snow into water, and becomes insensible in the latter. Dr. Black, observing these phenomena, said that the heat is concealed (*latent*) in the water and vapor, and introduced the name and the theory of latent heat. This discovery suggested to Watt, who was a pupil of Black, his improvements in the steam engine. In 1766, Dr. Black was again made the successor of Dr. Cullen, being appointed to the chemical chair of the university of Edinburgh. Impressed with his responsibility as a lecturer before the large concourse of students who frequented that university, he made no further investigations, devoting himself exclusively to the preparation of his lectures, and so great was his success that he made chemistry a fashionable study at Edinburgh, and a branch of a polite education. His lectures were resorted to by the gentlemen of the capital and

by men of science from all parts of Europe. It is a curious fact that Dr. Black, having given up experimenting for lecturing, combated for several years results which other chemists had legitimately founded upon his own discoveries. A feeble constitution obliged him to husband his strength in his later years, and, unable to develop his views with the completeness and nicety which he desired, he desisted at length from any attempts at composition, and various continental chemists put forth in their own names the ideas which they had received in the lecture-room of Dr. Black. His only publications were 8 dissertations, giving an account of his experiments on magnesia, quicklime, and other alkaline substances; his observations on the more ready freezing of water that has been boiled; and his analysis of some boiling springs in Iceland. His death occurred while he was sitting at table, and so gently that he did not drop the glass of milk which he held at the moment in his hand, but rested it upon his knee, and was, at first, thought to have fallen asleep.

BLACK ASSIZE, a judicial sitting of the courts held at Oxford in 1577, and rendered historical by the pestilential and deadly fever which was introduced into the court from the gaol, and swept away judges, jurymen, and counsel, and extended itself into the town and neighborhood. The superstitions of the age invested it with a special character, and it was remarked that no women nor poor people died of it.

BLACK BAND, the name given by Mushet to certain layers of argillaceous carbonate of iron of the coal formation found near Airdrie, E. of Glasgow, as also in other parts of Scotland, and in Wales, and which, until he called attention to them, had escaped notice. They are of the common variety of this ore, only of a darker color than usual, and in blocks of pretty regular thickness. The great extent and convenient access of the beds in Scotland, together with their occurrence near beds of coal and limestone, have given to this ore an importance due neither to its percentage of iron nor to the quality of the metal it produces. It may be also that its value is somewhat enhanced by the mixture of bituminous and coaly matters, which renders a less amount of fuel necessary to produce the iron. A rich specimen of it, of specific gravity 8.0583, analyzed by Dr. Colquhoun, gave: per cent. carbonic acid, 85.17; protoxide of iron, 59.08; lime, 3.33; magnesia, 1.77; silica, 1.4; alumina, 0.63; peroxide of iron, 0.23; carbonaceous or bituminous matter, 8.08; moisture and loss, 1.41. Its percentage of metallic iron is 41.25.

BLACK COPPER, the crude metal produced by the first smelting of copper ores, and which requires subsequent melting and refining to convert it into merchantable copper. It is sometimes conveniently and rudely prepared in cheap furnaces near the copper mines, as the easiest method of concentrating the metallic portions of the ore and reducing the cost of transporta-

tion to distant markets. It generally contains from 70 to 95 per cent. of copper, mechanically mixed with metallic iron and a small proportion of other foreign matters.

BLACK DEATH. See **PLAGUE**.

BLACK FEET, a powerful Indian tribe at the foot of the Rocky mountains, and between the Yellowstone river and the Missouri. They are one of the most powerful and formidable tribes in the western territory, and, until recently, have given much trouble to the government, which, on more than one occasion, has found it necessary to send troops to overawe them. Against them the famous expedition to the Yellowstone, in 1826 and 1827, under command of Gen. Atkinson, was directed. They are said to number about 10,000 warriors, but as they receive no annuities from the government but little care has been taken to obtain a correct census. They are great robbers and depredators, and furnish large quantities of furs, &c., to the American traders, who have a station on the Yellowstone at the falls. They seem to have more affinity in language and customs with the tribes west than east of the Rocky mountains.

BLACK FLUX, a mixture of carbonate of potash and carbon in a state of the finest division. It is prepared by intimately mixing 1 part of nitre with 2 to 3 parts of crude tartar or cream of tartar, and deflagrating the mixture by dropping ignited charcoal into it. When the chemical action has ceased, the black product is ground in a mortar, passed through a fine hair-sieve, and then put away for use. It must, from its property of deliquescent on exposure to the air, be kept in well-stopped bottles. It is employed as a flux in reducing ores of metals, particularly of lead and copper; and it has the properties both of the reducing and of the desulphurizing fluxes. See **FLUX**.

BLACK FOREST, the south-western extremity of the ancient Hercynian forest, called by the Romans *Sylva Martiana*, and which received during the middle ages the name of Schwarzwald or Black Forest. It is a range of woody mountains in the south-western part of Germany, traversing the territories of Baden and Würtemberg, and forming the eastern boundary of the basin of the Rhine. It extends 85 miles in length, almost parallel with the course of the Rhine, from which it is distant in many places not more than 20 miles, and has a breadth in its southern part of about 30 miles, and in its northern part of about 18. The Black Forest consists rather of elevated plains or tableland, than of insulated mountains, and describes itself upon the horizon in regular undulating lines without any of those sudden peaks and notches which mark the summits of the Alps and Pyrénées. Its greatest elevation is near and to the east of Freiburg, in the region where the Wiesen takes its rise, and where is the famous defile called Hell, a narrow valley surrounded by lofty mountains, and celebrated in the retreat of Moreau in 1796. The highest summits, the Feldberg, the Belchenberg, and

the Kandel, are between 4,000 and 5,000 feet above the level of the sea. The descent of the Black Forest toward the Rhine is very abrupt, causing the rivers which take their rise on this side, the Murg, Kinzig, and Elz, to swell gradually during the rains, and to merit, until their union with the Rhine, the name of capricious torrents. The eastern slope is very gentle, and gives rise to the Neckar and the Danube, the former soon changing its direction to the north and west, and joining the Rhine, the latter receiving numerous tributaries from the Alpine systems as it continues its course to the east. The Black Forest is composed mainly of granite, though the surface is in some places covered with sandstone, and gneiss appears around its base. On some of the heights porphyry is found, and there are many mines of silver, copper, iron, lead, and cobalt. Its mineral waters too, especially those of Baden and Wildbad, have a European celebrity. The summits of the Black Forest are during 8 months of the year covered with snow; they are generally destitute of trees, and except during the greatest heats of summer display no verdure. Descending from the top, the first trees that appear are the pine, the beech, and the maple, which are succeeded by the dense forests of fir with which all the middle and lower parts of the mountains are covered. These firs make the timber of ships for navigating the Rhine, and also furnish those forests of masts which fill all the great ports of Europe. Here, near the foot of the mountains, are many picturesque valleys, of which that of the Murg, situated near the thermal waters of Baden, is particularly distinguished for its natural beauty. Villages and hamlets are interspersed, and the inhabitants are mainly engaged in rearing live stock, trading in timber, and in the manufacture of numerous toys, which are spread over the world for the amusement of the youthful generation. The most famous of these is the wooden clock, of which it is estimated that the number of 180,000 are annually distributed through Europe and America. Agriculture is there of little importance, the soil being unfruitful and the climate severe, yet the valleys produce excellent fruits.—The middle and more recent ages have left traces of their history on the whole range of the Black Forest. Abbeys and castles stand in decay, the monuments of a past greatness, and pious and poetic legends hover about their ruins. There is the castle of Geroldseck, founded, if tradition be true, by the brother of Charlemagne; the castle of Stauffenburg, once occupied by a bold knight, the lover of an Undine or water-spirit; the 2 castles of Baden, one in ruins, transformed into a park and made open to all, the other near by, built over a dungeon in which the Vehmish tribunal used to meet; the castle of Yberg, ill-famed in the mouths of the people, because an impious and rapacious knight had there exhumed the bones of one of his ancestors to find treasure; and the castle of Roeteln, in the vale of Wiesen,

the abode of Hebel, the German song writer. These traditional attractions, joined to its beautiful scenery and its mineral waters, make the Black Forest, despite its unpropitious name, a most interesting locality. The peculiar industry and simplicity of the inhabitants, some of them constructing children's playthings in cottages, some guiding rafts of timber down the mountain torrents, give an additional interest. Agreeable sketches of home-life in the Black Forest may be found in the tales of Berthold Auerbach.

BLACK GUM, the arbitrary name of a tree without gum, a species of *nyssa* or *tupelo* of Adanson, which is the only genus of Endlicher's suborder *nyssaceae* of his order *santalaceae*. Linnæus had it in *polygamia diacia*; Elliott placed it in *diacia pentandria*, and Darlington in *pentandria monogynia*. The black gum is the *N. multiflora*, and is known in New England as snag-tree and hornpipe; in New York as pepperidge, and as the gum-tree in the middle states. It thrives in low, clayey soil, and in dense forests grows to 40 feet high. Its external habits are various, and it is often confounded with other trees. It has very many branches, which are often crooked; a dense pyramidal head; leaves 1 to 5 inches long, and of a lustrous green, in tufts of 4 or more at the ends of the branches; greenish flowers in clusters, ripening to blue-black; mouse-colored bark in longitudinal furrows; wood close and tough, resists splitting, though it decays sooner in the weather than that of the elm. The wood is used for water-pipes in the salt works at Syracuse; it is also good for hatters' blocks, wheel naves, and cog-wheels. The tree is very vigorous; it was introduced into Europe as an ornamental tree in 1739; it thrives in the south of England, and even in Hanover.

BLACK HAWK, a N. E. central county of Iowa, with an area of 576 sq. miles, divided by Cedar river into nearly equal parts. The surface is occupied mainly by prairies, though portions of it are well wooded. The productions of the county in 1856 amounted to 217,168 bushels of Indian corn, 26,821 of wheat, 2,365 tons of hay, 36,567 lbs. of butter, and 5,904 lbs. of cheese. Pop. 5,538.

BLACK HILLS, the name given to a mountain range of Missouri territory. Commencing near the Missouri river, in lat. 47° N. and long. 108° W., it stretches along this meridian to about 43° N. lat., after which it suddenly changes its course to the west, and is finally lost among the Rocky mountains. On the W. side of this range are the tributaries of the Yellowstone river; on the E. and S. the affluents of the Missouri and the Platte. Laramie Peak is the highest known summit; it has an elevation of 8,000 feet above the sea. Recent explorations have shown the Black Hills to be much nearer the Missouri river than was formerly supposed.

BLACK HOLE, a small close dungeon in Fort William, Calcutta, which will long be re-

membered as the scene of one of the most tragical events in the history of British India. On the capture of Calcutta by Surajah Dowlah, June 20, 1756, the British garrison, consisting of 146 men, under the command of Mr. Holwell, were taken prisoners and locked up for the night in the common dungeon of the fortress, a strongly barred room, 18 feet square, and never intended for the confinement of more than 2 or 3 men at a time. There were only 2 windows, both opening toward the west, whence, under the best of circumstances, but little air could enter. Add to this that a projecting verandah outside, and thick iron bars within, materially impeded what little ventilation there might be, while conflagrations raging in different parts of the fort gave the atmosphere an oppressiveness unusual even in that sultry climate, and we may form a faint idea of the sufferings of these unhappy creatures, exhausted with previous fatigue, and packed so tightly in their prison that it was with difficulty the door could be closed. A few moments sufficed to throw them into a profuse perspiration, the natural consequence of which was a raging thirst. They stripped off their clothes to gain more room, sat down on the floor that the air might circulate more freely, and, when every expedient failed, sought by the bitterest insults to provoke the guards to fire on them. One of the soldiers stationed in the verandah was offered 1,000 rupees to have them removed to a larger room. He went away, but returned saying it was impossible. The bribe was then doubled, and he made a second attempt with a like result; the nabob was asleep, and no one durst wake him. By 9 o'clock several had died, and many more were delirious. A frantic cry for water now became general, and one of the guards, more compassionate than his fellows, caused some to be brought to the bars, where Mr. Holwell and 2 or 3 others received it in their hats, and passed it on to the men behind. In their impatience to secure it nearly all was spilt, and the little they drank seemed only to increase their thirst. Self-control was soon lost; those in remote parts of the room struggled to reach the window, and a fearful tumult ensued, in which the weakest were trampled or pressed to death. They raved, fought, prayed, blasphemed, and many then fell exhausted on the floor, where suffocation put an end to their torments. The Indian soldiers, meanwhile, crowded around the windows, and even brought lights that they might entertain themselves with the dreadful spectacle. The odor which filled the dungeon became more deadly every moment, and about 11 o'clock the prisoners began to drop off fast. At length, at 6 in the morning, Surajah Dowlah awoke, and ordered the door to be opened. Of the 146 only 23, including Mr. Holwell (from whose narrative, published in the *Annual Register* for 1758, our account of this event is partly derived), remained alive, and they were either stupefied or raving. Fresh air soon re-

vived them, and the commander was then taken before the nabob, who expressed no regret for what had occurred, and gave no other sign of sympathy than ordering the Englishman a chair and a glass of water. Notwithstanding this indifference, Mr. Holwell and some others acquit him of any intention of causing the catastrophe, and ascribe it to the malice of certain inferior officers, but many think this opinion unfounded. Holwell and 8 others were sent prisoners to Muxadavad; the rest of the survivors obtained their liberty, and the dead bodies were carelessly thrown into a ditch. The Black Hole is now used as a warehouse, and an obelisk, 50 feet high, erected in memory of the victims, stands before the gate. It was struck by lightning some years ago, and has since been gradually falling to ruin.

BLACK JACK, a term loosely applied by miners to blende, the sulphuret of zinc, or to any other ore which resembles it in being obnoxious to them, if in no other respect.—It is also the name commonly given in the southern states to a small species of oak tree (*quercus stellata*), also called post-oak, for its being, when full grown, of a convenient size for making posts.

BLACK LEAD, an incorrect name for **GRAPHITE**, which see. It contains no lead, and has no relations with lead ore.

BLACK LETTER, a term applied to the old English or modern Gothic letter, in which the early manuscripts were written, and the first English books were printed.

BLACK MAIL, a tribute formerly paid by the occupants of lands in the northern counties of England to some Scottish chieftain for protection against the depredations of border rieviers or moss troopers. By the terms of the arrangement the borderer receiving this tribute was bound not merely to abstain from injury to the person paying it, but also to recover his property if taken by others—hence it has been called protection rent. (See Scott's introduction to "Border Minstrelsy.") At a later period, after civil order had been established in the border counties, and agriculture and peaceful habits prevailed in the lowlands of Scotland, the custom of paying black mail to the highland chiefs by the lowland farmers became common, and continued till within a century. Some incidents of this custom are related in 2 of Scott's novels, "Waverley" and "Rob Roy." The origin of the term seems to be this: mail in the old Scottish law was used for rent of an estate. It seems to have been the name of a small coin in England and Scotland. Black mails may be considered therefore as equivalent to black rents, which were payable in kind, that is, what was produced by the estate; being the same as the *reditus nigri*, in contradistinction to the *reditus albi*, which were payable in silver.—The modern sense of the phrase is mainly derived from the fact that such rent was paid to robbers and thieves as the price of immunity; hence now used for money paid under any extortion, especially when the injury sought to be guarded

against is one for which there is no adequate protection by law. It generally implies a corrupt speculation out of some advantage which it is unconscionable to use. It is also sometimes used for money paid to prevent an exposure of some wrong doing, being in this sense what is called hush money.

BLACK MOUNTAINS, the culminating group of the Appalachian system, already referred to in the article **APPALACHIAN MOUNTAINS**, named from the dark growth of balsam-firs and other evergreens which cover their summits. Their position is in Yancey and Buncombe counties, North Carolina, between the main central ridges on the west and a portion of the Blue Ridge on the east. Unlike the other ridges of the Alleghanies, they lie for the most part transverse to the general trend of the range, and give this direction to the great valleys and rivers included between them. They rise from a district of great elevation, the height of the valley at Asheville, on the French Broad river, being about 2,000 feet above the sea, and that of Toe river, at Burnsville, Yancey county, about 2,500 feet. From this plateau the drainage is toward the Ohio in a northerly direction by the branches of the Great Kanawha, by those of the Holston and the French Broad toward the south-west, and by those of the Yadkin and the Catawba into the Pedee and Santee toward the south-east. This position at the sources of streams flowing in such diverse directions, long since pointed out this district as probably the most elevated east of the Rocky mountains. The distinguished botanists, Michaux, father and son, were led to the same opinion by their observations upon the northern character of the forest growth with which these mountains are covered. In 1835, the first attempts to determine the elevation of the greatest heights were made by Dr. E. Mitchell, late professor at the university of North Carolina at Chapel Hill. The principal peak, which is known in North Carolina as Mount Mitchell, he estimated, according to the statements of his friends, by barometrical observations, to be 6,476 feet above the sea, calculating Morgantown, his base, to be 968 feet above tide. The late railroad surveys give this point an elevation of 1,169 feet, or of that where his stationary barometer hung about 1,200 feet, which would make the height of the peak about 6,700 feet. In 1844 he visited the locality again, and calculating from a base of more uncertain elevation at Asheville, he made the height 6,672 feet. In 1855, the Hon. T. L. Clingman of North Carolina made the elevation 6,941 feet, and in 1856 Prof. Guyot determined the highest point, which, as stated in the article **APPALACHIAN MOUNTAINS**, he then called the Black Dome, to be 6,760 feet high. The following are the elevations and names of the 12 highest points, all of which are higher than Mount Washington in New Hampshire, as published in 1857 from the investigations of Professor Guyot:

1. Clingman's Peak.....	6,701
2. Guyot's Peak, or Balsam Cone	6,661
3. Sandoz Knob.....	6,619
4. Hairy Bear.....	6,597
5. Cat Tail Peak.....	6,585
6. Gibbs's Peak.....	6,586
7. Mitchell's Peak.....	6,576
8. Sugar Loaf, or Hallback Peak.....	6,491
9. Potato Top.....	6,339
10. Black Knob.....	6,377
11. Bowler's Pyramid.....	6,245
12. Roan Mountain.....	6,318

The summit of Mt. Washington is 6,285 feet above the level of the sea. In 1857 Dr. Mitchell made a third excursion to these mountains, for the purpose of establishing his claim to having first measured the elevation of the highest summit, the honor of which was also claimed by the Hon. Mr. Clingman. He went well provided with several of Green's barometers, recommended by the Smithsonian institution, intending not only to make exact measurements of the highest point, but also, at the same time, to test in this latitude the formula adopted for barometrical observations. Before he had fixed, however, upon a series of points by the spirit level, preparatory to the observations with the barometer, the sad accident occurred by which he lost his life, as he was traversing alone one of the mountain ravines. His name is thus still more intimately associated with these high summits, by which one of them will long continue to be known.

BLACK RIVER, of New York, rises in Herkimer co., and after passing through Oneida and Lewis counties, changes its course at a place called Great Bend, passes by Watertown, and flows through Black River bay into Lake Ontario. Near Turin, in Lewis co., it has a fall of about 68 feet. Below the fall, it is navigable to Carthage, a distance of 40 miles. From Carthage to Watertown is a series of rapids, rendering navigation almost impossible. A canal has been opened, however, from the Upper falls to Rome on the Erie canal. The whole length of the river is 125 miles, and its breadth at Watertown (6 m. from its mouth) is 60 yards.—**BLACK RIVER**, or Big Black river, of Missouri and Arkansas, is the largest affluent of White river. It rises in the S. E. part of the former state, takes a southerly course, enters Arkansas, and joins the White river 40 miles below Batesville. During 9 months of the year it is navigable for a distance of 100 miles from its mouth. Its entire length is about 400 miles. Trout and other excellent fish are caught in its waters in great abundance.

BLACK ROD, the usher to the order of the garter, so called from the black rod which he carries at the feast of St. George, when the order annually assembles. He also notifies the election of new knights, carries the garter to foreign princes and others, and is the principal officer of the college of arms, and chief of the heralds.

BLACK SEA (anc. *Pontus Euxinus*), an inland sea, on the border between Asia and Europe, bounded by Turkey, Russia in Europe, and the Caucasian provinces, and connected with the Mediterranean through the straits of

the Bosphorus and Dardanelles. It lies between 28° and 41° 30' E. long., and 41° and 46° 40' N. lat. Its extreme length is 700 miles from E. to W., its extreme breadth 400 miles on the 81st meridian. It has a coast line of more than 2,000 miles, and a superficial area of about 180,000 sq. m. It receives the waters of the Danube, Dnieper, Dniester, and Don, beside smaller rivers, and drains by these a territory in Europe and Asia of scarcely less than 1,000,000 sq. m. There are geological indications that the Black sea was at one time much larger than it is now; that it once had no outlet to the Mediterranean; that its waters were much higher than at present, flooding a considerable part of southern Russia, and reaching even to the Caspian and Aral seas, with which it formed one body; and that at a period not far antecedent to the earliest history, some concussion of nature opened for this huge collection of water a passage into the Mediterranean. Something like this was the universal belief of the ancients, more probably a tradition than a fancy. Thus the Cyanææ, the 2 volcanic rocks at the entrance of the Bosphorus, which, under the name of Symplegades, were represented by the Greek poets as sometimes closing together, indicate by their geological structure that they were once united, and must have closed the passage. And the southern provinces of Russia bear evident marks of having once been a bed of the sea, and of having been laid bare at a comparatively recent period. The modern name of Black, which all the European languages conspire to fix upon this sea, is thought to have been given it primarily by the Turks, in their terror at looking out upon the first large expanse of water with which they became acquainted. Natural features probably assisted in suggesting the name. The prevalent wind is from the N. E.; it comes laden with moisture from a wide swampy territory, and frequently veils the sea in darkness by fogs and rains. Owing, too, to the confined extent of the water, a strong wind quickly lashes it into a tempest, and gives to the whole sea something of the appearance of a whirlpool. These brief but troublesome tempests are especially frequent during the winter. Thunderstorms are rare, but masterpieces of their kind when they do occur, and are often accompanied by water-spouts and hailstones. The difficulties which the atmosphere offers to the navigation of the Black sea are compensated by the character of the sea itself. Both its shores and its interior parts are remarkably free from rocks, sandbanks, or shallows, and ships may always lie to, or ride at anchor, with very little danger. There is but one island in the whole sea, Serpent Isle, 80 miles from the mouth of the Danube, once a sacred place, with a temple, but unoccupied for centuries, till lately it was made a station for English and French vessels. It is now purposed to build a light-house upon it. The depth of the sea increases regularly according to the distance from the shore; and in its central parts, no bottom is reached even by a

line of 160 fathoms. There is no observable ebb and flow to its waters, but its large accessions from the rivers occasion strong currents, which all set, with more or less directness, toward the Bosphorus. When these currents are also helped by the winds, the waters are sent through the straits with such violence, that vessels are sometimes detained for months outside, unable to enter against them. Its climate has wide extremes, but is generally colder than would be inferred from its latitude, owing to the prevalence of north winds. Its fisheries are unimportant. The specific gravity of its water is 1.142. On its coast, Odessa is the most important commercial port, and Varna is the chief Turkish fortress; beside which, the principal harbors are Kherson, Sebastopol, Sinope, and Trebizond.—The shores of the Black sea are known both in fabulous and genuine history. Colchis, the goal of the Argonautic expedition, was located on its east; the original Cimmerian darkness was upon its north; and on all its sides the Lydian, Persian, Byzantine, Turkish, and Russian powers have acted the events of their history. From the time of Constantine till the 15th century, it was the centre of the transplanted Roman world; and till the cape of Good Hope was discovered and sailed round, it was the passage-way of the Genoese and other European trade with the Indies. The Turks for a time excluded the ships of all other nations from it, and lately Russia sought to make it a closed sea under its own military command; but the result of the late war between Russia and the 2 western powers of Europe has been the neutralization of the Black sea, the equal exclusion from it of all ships of war belonging to whatever nation, and the equal admission to it of all ships of commerce.

BLACK SILVER, called also **BRITTLE SILVER ORE** and **STEPHANITE**, a compound of sulphuret of silver and sulphuret of antimony, found near the cobalt and bismuth mines of Saxony.

BLACK SNAKE (*Coluber constrictor*, Linn.), one of the most common snakes, very generally distributed over North America. The head is oval and long; the snout prolonged and rather pointed; the nostrils are lateral, very large near the snout, and open outward and a little backward; the eyes are large and bright, the pupil black, and the iris very dark gray; the body is long and slender, and covered with large smooth scales above, and with broad plates below; the tail is also long and slender, and, according to Holbrook, may be used as a prehensile instrument; according to Dr. Storer, the abdominal plates are 184, and the caudal scales 85. The color above is a dark bluish black; below, slate-colored; chin and throat pure white, with occasionally a few black spots; the margin of the jaws and snout yellow. The usual length is from 4 to 5 feet, of which the head is 1½ inch, and the tail about 16; one was killed at Hingham, Mass., in 1842, 7 feet long, which had enfolded and severely crushed in its coil a rabbit, and which had in its body 15

quail's eggs, unbroken, and some of them containing the young bird. It is very active, being from its rapid motions frequently called "the racer;" it climbs trees with great facility, and is often found entwined around bushes containing birds' nests. It frequents shady and shrubby places near ponds and streams, though it is very fond of basking in the sun. It feeds on mice, moles, frogs, toads, lizards, eggs, and young birds; the larger specimens prey upon squirrels, chickens, and even young rabbits; it is very destructive to young birds, and a noted robber of nests. Its specific name indicates that it possesses the power of destroying its prey by the constriction of its folds; its power in this respect is known to many a schoolboy, around whose leg or arm it has coiled, when the human robber of birds' nests has come into contact with the serpent thief similarly inclined. The one killed at Hingham had a rabbit in its coils; but it doubtless seizes its smaller and ordinary prey with its mouth only. It is very daring, and, during the breeding season, will often attack persons passing at a distance; its bite is perfectly harmless. There is no good evidence that it has any power of "fascination," its victims being taken by activity and direct assault.

BLACK TIN, tin ore that has been concentrated by stamping and washing, and brought into the condition to be sold to the smelters.

BLACK VOMIT, the last vomiting, in many cases of yellow fever, of a dark mucous-looking fluid, like coffee-grounds. It is regarded as a fatal symptom. The disease itself is sometimes called by this name. The blood is blackened and partially coagulated by a free acid, perhaps acetic and hydrochloric acids, which form in the system.

BLACK WALNUT. See **WALNUT**.

BLACK WARRIOR, a river of Alabama, formed by the junction of the Mulberry fork and Locust fork, in Walker county. It follows a south-westerly course, and enters the Tombigbee above Demopolis. The river is navigable for steamboats for 150 miles, or nearly its whole length. Coal and iron are found along its banks. It is sometimes called the Tuscaloosa.

BLACKALL, *Offspring*, an English prelate, was born at London in 1654, died at Exeter in 1716. For 2 years after the coronation of William III. he refused to take the oath of allegiance, but finally yielded. In 1699 he engaged in a controversy with Toland, who had denied, in his life of Milton, that Charles I. was the author of the "Icon Basilike," and expressed doubts of the genuineness of the Scriptures. Blackall was consecrated bishop of Exeter in 1707. His works, in 2 vols. folio, were published in 1728.

BLACKBERRY, the berry of the bramble, a popular name applied to different varieties of the genus *rubus* and their fruit. Blackberry root is an excellent astringent, much employed in chronic diarrhoea and in dysentery. Dewberry root (*R. trivialis*) and blackberry root (*R. villosus*) have the same medicinal properties. They occur in pieces of various lengths,

of a brownish color, being covered with a thin bark, which abounds most in the astringent principle, tannic acid. The decoction is made by boiling an ounce of the smaller roots in 3 half pints of water down to 2; the dose being 2 fluid ounces, or $\frac{1}{4}$ th portion of a pint.

BLACKBIRD (*turdus merula*, Linn.), a European species of the thrush family, called also merle in France and some parts of England. The plumage is full, soft, and glossy; the length in the male is 10 $\frac{1}{2}$ inches, and the extent of wings 16 inches, the length in the female is 10 inches, and the extent of wings 15 inches. In the adult male the bill is $\frac{1}{3}$ ths of an inch long, and of a bright orange color, as are the mouth, tongue, and margins of the lids, the iris hazel, the feet and claws dusky brown, the heel and soles yellow; the general color of the plumage is deep black, sometimes slightly tinged with brown; the primaries are lighter, and obscurely edged with brown; the central part of the hidden portion of each feather is light gray. In the female, the bill is dark brown; the general color of the plumage is deep brown above, lighter beneath; the throat and fore neck pale brown, streaked with darker triangular spots. The young are dusky brown above, with dull yellowish streaks; pale yellowish brown, spotted with dusky, beneath. Albino specimens are occasionally seen. The blackbird is an admirable singer, its notes, though simple, being loud, rich, and mellow, most frequently heard in the morning and evening. It prefers cultivated districts, in winter frequenting the neighborhood of houses, and keeping in the shelter of the garden hedges. Its food consists of snails, seeds of grasses and grain, insects, larvæ, worms, berries of various kinds, and also fruits. It is a very shy and active bird, hopping on the ground with tail raised and wings loose; its flight along the hedges is fitful and wavering, but in an open field very steady and sustained. It is not gregarious, more than 3 or 4 being seldom seen together. The blackbird pairs in early spring, making a nest externally of grass stalks, twigs, fibrous roots, and mosses, the inside being lined with mud and afterward with dry grass; the nest is usually placed in a hedge, bramble thicket, or bushy pine. The eggs are from 4 to 6 in number, of a pale bluish green, spotted with pale umber. The female sits 18 days, the male singing till the young are hatched; 2 broods are commonly reared, one in May, the second in July. The flesh is excellent for food. The blackbird is often kept in cages, where its song is as joyous as in its native haunts; it is a troublesome species in an aviary, as it pursues and harasses other birds; in confinement it will eat crumbs, and raw or cooked flesh.—**BLACKBIRD** (*agelaius phoeniceus*, Linn.), more commonly called in New England red-winged blackbird, and belonging to the family of *sturnida*. The bill is straight, strong, conical, and black; the hind toe and claw the strongest. The plumage of the adult male is glossy black, except the smaller wing coverts, the first row

of which are cream-colored, the rest scarlet; the length is 9 inches, extent of wings 14 inches. The female is nearly 2 inches less; the upper parts black, the feathers with a pale brown margin, underneath streaked with black and dull white; a band of pale brown over the eye, and some of the smaller wing coverts slightly tinged with red. According to Nuttall, this bird is found during the summer over the whole of North America from Nova Scotia to Mexico. It arrives in New York and New England about the 1st of April, preferring swamps, meadows, and low situations; at this season it lives on insects and grubs, afterward on the young and tender corn. It begins to build its nest early in May, on an alder bush or tuft of grass in some marsh or meadow; the eggs, from 3 to 6, are white, tinged with blue, with faint purple marks. They congregate in such numbers in a very small space, that great havoc may be made at a single discharge of a gun. The flight is usually even; on the wing the brilliant scarlet of the coverts contrasts finely with the black of the general plumage. Some of its notes are agreeable to the ear. In August, when the young are ready to associate in flocks, they do considerable mischief to the Indian corn; they are then killed in abundance, and are very good eating. Such is their confidence in man, in spite of his persecutions, that, when fired upon, they only remove from one part of a field to another.—The name blackbird is given in the north-western states and Canada to the rusty grackle (*coelephagus ferrugineus*, Wils.), and in other parts of the country to the purple grackle (*quiscalus versicolor*, Vieill.); both genera belong to the family *sturnida*, or starlings.

BLACKBURN, a town, parish, and parliamentary borough of England, county of Lancaster. It stands in the midst of a barren district, containing a number of valuable coal mines, to which, as well as to its proximity to the London and Liverpool canal, the importance of Blackburn as a commercial place is mainly to be ascribed. Cotton goods, especially of the coarser kinds, are manufactured to a great extent in the town and vicinity; the annual value of the fabrics produced is estimated at above £2,000,000. Blackburn is irregularly built, but contains some fine buildings. In addition to a number of chapels, schools, public halls, &c., it has a magnificent church, rebuilt in 1819 at a cost of £28,000. It is the birthplace of James Hargreaves, the inventor of the spinning-jenny. Pop. of the borough in 1861, 46,686.

BLACKBURN, FRANCIS, an English theologian, born at Richmond, Yorkshire, June 9, 1705, died there Aug. 7, 1787. He graduated at Cambridge in 1726, and was presented to the rectory of his native town, and in 1750, became archdeacon of Cleveland and prebendary of Bilton. He wrote several polemical works, among which the "Confessional" appeared in 1766. It was greatly objected to by many orthodox clergymen; indeed, so heterodox was he soon considered that on the death of Dr. Chan-

dlar, pastor of the dissenting chapel in the Old Jewry, London, the congregation actually invited Archdeacon Blackburne to fill the vacancy, believing that he would not object to leave the church of England. When the Catholic question was mooted, in 1768, he published a work contending that Roman Catholics were persecutors where they had the power, and therefore were entitled to no toleration from Protestants.

BLACKCAP (*syllia atricapilla*, Briss.), belonging to the family of *lucanida*, or warblers, a native of Europe, migrating to the north in early spring. The male has the upper parts light yellowish gray, the head black, cheeks, neck, and lower parts ash-gray, paler behind and tinged with yellow; wings and tail grayish brown; the length to end of tail is about 6 inches, extent of wings 9 inches. The female is a trifle larger, but is colored like the male, except that the upper part of the head is light reddish brown. It frequents woods and thick hedges, gardens and orchards. With the exception of the nightingale, it is considered the finest songster in Great Britain; its notes are full, deep, and mellow, and its trill is exceedingly fine; it will imitate very exactly the notes of the nightingale, thrush, and blackbird. Its song is continued from early in April to the end of June, the period of pairing and incubation. This bird is shy, going by short flights from one thick bush to another; it feeds on insects, larvæ, and berries. The nest, which is placed in the fork of some shrub, is made of dried stalks of grass, bits of wool, moss, fibrous roots, and hairs; the eggs are 4 or 5 in number, about $\frac{1}{2}$ of an inch long, and very nearly as broad, grayish white, faintly stained and freckled with purplish gray and blackish brown. Both sexes sit upon the eggs.—BLACKCAP (*parus atricapillus*, Wils.), an American species of titmouse, belonging also to the *lucanida*. This bird is $5\frac{1}{4}$ inches long, and 8 in extent of wings. The bill is brownish black; whole upper part of the head and hind neck, and a large patch on the fore neck and throat, pure black; between these a white band, from the bill down the sides of the neck, growing broader behind and encroaching on the back, which, with the wing coverts, is ash-gray tinged with brown; lower parts brownish white; quills brown, and, with the secondaries, edged with white, leaving a conspicuous white bar on the wings; tail brown, white edged. The Carolina tit (*parus carolinensis*, Aud.) is almost precisely the same, being only an inch smaller. The blackcap is better known in New England as the chickadee, which is an imitation of its note as it explores the trees in search of the eggs and grubs of insects, which form its principal food. It destroys immense numbers of canker-worms, doing in this way eminent service to man; in the winter it comes near the houses, picking up seeds and crumbs which are thrown out of doors. It is an exceedingly lively bird, running over trees in all directions,

and thrusting its bill into every crevice where an insect might creep. The severest cold does not affect its vivacity nor the numbers. The eggs are 6 to 10 in number, of a white color, with brownish-red specks, and are generally laid in holes excavated in trees by means of their bills.

BLACKCOCK, or **BLACK GROUSE** (*tetrao tetrix*, Linn.), a highly prized game-bird, of the family *tetraonida*, very generally spread over the northern parts of Europe, and in Great Britain, particularly in the wild and wooded districts of Scotland. The male weighs sometimes as much as 4 pounds, and the female about 2. In the male, the length to the end of the tail is about 28 inches, and the extent of wings 38 inches; bill an inch long, strong, and brownish black; the iris brown; over the eye a bare granulated skin of a scarlet color; the whole upper plumage of a steel-blue color, the scapulars and wings tinged with brown; the primaries brown, with brownish white shafts, the secondaries tipped with whitish, forming a bar across the wings, conspicuous in flight; the under wing coverts white, a few of them being visible when the wing is closed; the breast and sides brownish black, the abdominal feathers tipped with white; the legs and thighs dark brown, with grayish-white specks, the former feathered to the toes; the lower tail coverts white, the upper brownish black; the tail, which is forked, with the lateral feathers curved outward, deep black. The female is about 18 inches long, and 31 inches in extent of wings; she resembles the other females of the family in her less brilliant markings; the general color of the plumage is ferruginous, mottled and barred with black above, and with dusky and brown bars on a paler ground below; the tail is nearly even at the end, straight, and variegated with ferruginous and black; the white about the secondaries and bend of the wing is much as in the male. The favorite abode of the blackcock is in the highlands and glens, among the hills clothed with a luxuriant growth of birch, hazel, willow, and alder, with an undergrowth of deep fern; here they find abundant food and shelter from the winter's cold and summer's sun. Their food consists of tender twigs, berries, heaths, and occasionally the seeds from the stubble-fields. The flight is heavy, straight, of moderate velocity, and capable of being protracted. They perch readily on trees, but the ordinary station is the ground, on which they repose at night. The blackcocks are polygamous, and fight desperately for the females during April; having driven off all rivals, the male selects some eminence early in the morning, on which he struts, trailing his wings, swelling out his plumage and wattles over the eyes like a turkey-cock; the females answer to his call and soon crowd around him. After the courting season the males associate together peaceably. The eggs are 6 to 10 in number, of a dirty white color, with rusty

spots, and are laid in a very rude nest on the ground, among the heaths; the young are reared entirely by the female, which they resemble in color. Their flesh is an excellent and important article of food. Foxes and rapacious birds kill great numbers of them.

BLACKFISH, a name given in New England to two entirely different kinds of fish; the one a smaller kind of whale, 15 to 20 feet in length; and the other, the tautog (*T. Americana*, DeKay), caught with hook and line on rocky bottoms. It abounds on the coast of New England, on both sides of Long Island, and off Sandy Hook, New Jersey. The name blackfish is given to it on account of the color of its back and sides; the lips, lower jaw, and belly, in the males particularly, are white. The tail is entire, somewhat convex, the middle rays being somewhat longer than the external ones. The body is covered with small, hard scales. They vary in size from 2 to 12 or 14 pounds. They are caught early in the spring, and through the summer, from off the rocky ledges of the coast, or from boats anchored over the reefs. The fishing for them is a favorite sport in the warm summer weather, and the fish, though of dry flavor, are much esteemed when baked.

BLACKFORD, a county in the E. N. E. part of Indiana, drained by the Salamonie river, and having an area of 180 sq. m. The surface is diversified by plains and rolling lands, and the soil is fertile. The productions in 1850 amounted to 67,060 bushels of corn, 18,262 of wheat, 9,384 of oats, and 1,254 tons of hay. There were 5 churches in the county, and 20 pupils attending public schools. Pop. 2,860; capital, Hartford.

BLACKFRIARS, a name given to the Dominican order of mendicant monks in England, from the color of their garments. Thirteen Dominicans first came into England, A. D. 1221, and fixed their first house at Oxford in that year. The Blackfriars' at London was their second house, whence the parochial district still bears the name of the order. At the time of the dissolution of monasteries in England and Wales, there were 58 houses of this order.

BLACKFRIARS' BRIDGE, one of the 7 bridges over the Thames in London, and 8d in point of date. A monastery of Dominicans formerly existed near its site. The north end is situated in the city of London, the south in the borough of Southwark. It consists of 9 elliptical arches, of which the central arch is 100, and the side arches 70 feet span. The whole length is 1,085 feet. The breadth of the carriage-way is 28 feet, and the foot-ways 7 feet each. The greatest height of the bridge, from the caissons in which the piers are laid to the top of the balustrades, is about 70 feet. The roadway was very steep, being in some places as much as 1 in 16. The designer and builder was Robert Mylne. The first stone was laid Oct. 31, 1760, and was finished in 1770. The bridge was built by the corporation of the city of London, who raised almost the whole of the money by public

subscription. The total cost of the work was nearly £300,000. At first the city levied toll upon it, but, about 1770, the government bought up all the shares, and made a present of the bridge to the public, free of toll, as it has ever since remained. It is constructed of Portland stone. In consequence of its decay, it was repaired in 1833 and following years, and the approaches made less steep. The success of Blackfriars' bridge demonstrated the equal adaptiveness of the elliptical arch with the semicircular—a fact which was previously doubted.

BLACKGUARD, originally a semi-contemptuous, semi-jocular name given to the lowest menials of the court of Queen Elizabeth, the carriers of coals and wood, turnspits and laborers in the scullery, who all followed the court in its progresses. In Hodge's "Illustrations" we read: "Her majesty, by some means I know not, was lodged at his house, Euston, farre unmeet for her highness, but fitter for the *blacks garde*." The term *blacks garde* was applied in Ireland in those times to all abandoned women of violent character, and also both in Ireland and England to low ruffians.

BLACKHEATH, an elevated heath in the county of Kent. It borders on Greenwich park, and is about $1\frac{1}{2}$ mile long by $\frac{1}{4}$ wide, about 5 miles from St. Paul's, London. It is a place of popular resort, and is used for cricket-playing. Adjoining the heath, on the east, is Morden college, founded in 1695, by Sir John Morden, for the support of 40 decayed merchants above 50 years old. Each of the pensioners receives £5 per month, and has an apartment, with medicine, coals, candles, washing, and attendance free. The Roman road from London to Dover crossed Blackheath. Many Roman, Celtic, and Saxon antiquities have been found there. In 1381 Wat Tyler and John Ball mustered their followers there. Jack Cade occupied the same position twice in 1450. In 1497 the Cornish insurgents, under Lord Audley, were routed there by the king's forces. Blackheath has been the scene of many historical pageants and processions, as it was formerly the custom for the mayor and corporation of the city of London, and even the king and court, to repair thither to meet illustrious foreigners from the continent. Henry IV. met there (1400) the Byzantine emperor, Michael Palæologus; the corporation of London there met Henry V., on his return from Agincourt, and the year afterward, the Emperor Sigismund. The most splendid, and one of the last of all, was the reception of Anne of Cleves, by Henry VIII., Jan. 1541; she was conducted through Greenwich park to the palace at Greenwich, followed by prodigious numbers of nobility and gentry, and 1,200 privileged citizens, clad in velvet and chains of gold.

BLACKING, a preparation applied to leather, designed either to preserve or to polish it. There are a great variety of recipes for its manufacture, all of which are empirical, and some in-

troduce ingredients which must be decidedly injurious to the leather. Ivory black, vinegar or sour beer, sugar or molasses, and a little sweet oil and sulphuric acid, are the common ingredients. The corrosive properties of the acids are neutralized by the lime in the ivory black, and the new combination thus produced is well adapted to the purposes desired. It is made in the form of a paste, and also liquid. The following recipe (patented in England) is designed to give the leather somewhat of a waterproof quality by the caoutchouc, one of its ingredients: 18 oz. of this substance are to be dissolved in 9 lbs. of hot rape oil; to this add 60 lbs. ivory black, and 45 lbs. molasses, with 1 lb. finely ground gum arabic, previously dissolved in 20 gallons of vinegar, of strength No. 24; the whole to be well triturated in a paint-mill till smooth. Then add, in small successive quantities, 12 lbs. sulphuric acid, stirring strongly for half an hour. The stirring is to be continued for half an hour a day during a fortnight, when 8 lbs. of gum arabic, in fine powder, are to be added, and the half hour's daily stirring continued another fortnight, when it is ready for use. For paste blacking the same ingredients and quantities are used, except that instead of 20 gallons of vinegar, 12 gallons will answer, and a week of stirring only is required. A good blacking is also made more simply by mixing 8 oz. of ivory black, two of molasses, a table-spoonful of sweet oil, 1 oz. of sulphuric acid, 1 of gum arabic, dissolved in water and a pint of vinegar. —An excellent blacking for harness is prepared by melting 2 oz. of mutton suet with 6 oz. of beeswax, to which are to be added 6 oz. of sugar candy, 2 oz. of soft soap dissolved in water, and 1 oz. of indigo finely powdered, and, when melted and well mixed, a gill of turpentine. It is to be put on with a sponge and polished with a brush. —Blacking for stoves may be made of finely powdered black lead, of which $\frac{1}{4}$ lb. may be mixed with the whites of 8 eggs well beaten. The mixture is then to be diluted with sour beer or porter, well stirred, and heated to simmering for about half an hour.

BLACKLOCK, THOMAS, D. D., a clergyman of the established church of Scotland, born at Annan, Nov. 10, 1721, died July 7, 1791. He became blind at the age of 6 months. His father, who was a mechanic, used to read to him from the best English authors. The habit of mental concentration, induced by his loss of sight, was of great advantage to him. He early acquired a knowledge of Latin. At 12 he produced creditable verses. At 20 he was introduced into a circle of more highly educated associates. Dr. Stevenson, of Edinburgh, now offered him an education at the university, and in 1741 he commenced his course of studies, but the rebellion in 1745 interrupted them. He afterward returned to Edinburgh, and remained there 6 years more, becoming proficient in the classics and in music. A quarto edition of his poems was published in 1756, in London, by

subscription, when David Huime exerted himself to promote its circulation. Two octavo editions had been previously issued in 1746 and 1754. In 1759 he was licensed as a minister of the gospel. In 1762 he married, and was ordained minister of Kirkcudbright. In 1764 he resigned, and retired to Edinburgh on a small pension. He also instructed a few young men.

BLACKLOW HILL, an eminence near the town of Warwick, Warwickshire, England, upon which is a stone cross, marking the spot where Piers Gaveston, the favorite of Edward II., was beheaded by the barons in 1312.

BLACKMORE, SIR RICHARD, an English poet, born in 1650, died Oct. 9, 1739. He was the author of 6 epic poems, which owe their principal celebrity to the *Dunciad*. He was also physician to William III.

BLACKSTONE, WILLIAM, the first inhabitant of Boston, was an Episcopal minister, who settled there as early as 1625 or 1626, and died May 26, 1675, on Blackstone river, a few miles north of Providence. On the arrival of Gov. Winthrop at Charlestown, in the summer of 1630, it is stated in the records of that place that "Mr. Blackstone, dwelling on the other side of Charles river, alone, at a place by the Indians called Shawmut, where he only had a cottage, at or not far off from the place, called Blackstone's point, he came and acquainted the governor of an excellent spring there, withal inviting him and soliciting him thither; whereupon, after the death of Mr. Johnson and divers others, the governor, with Mr. Wilson, and the greatest part of the church, removed thither." At a court held in April, 1633, 50 acres of land near his house in Boston were granted to him forever.

BLACKSTONE, SIR WILLIAM, LL. D., an eminent English jurist, born in London, July 10, 1723, died Feb. 14, 1780. He was the son of a silk-mercer of London, the youngest of 4 children, and was born a few months after his father's death. His father seems to have left no provision for the education of his children, and the future judge was indebted to a maternal uncle for his education. In his 7th year he was placed at the school of the Charter-house, and in his devotion to his studies exhibited, at that early age, the constant assiduity for which he was distinguished through life. In his 12th year he lost his mother, and, being an orphan, was admitted, in 1735, on the nomination of Sir Robert Walpole, upon the foundation of the charter-house. His natural aptness and persevering attention to his studies made him the favorite pupil of the school. When he had attained his 15th year he was at the head of it, and his progress was so rapid that at 16 he was found fully qualified for the university. He accordingly entered Pembroke college, Oxford, Nov. 30, 1738, and had scarcely more than commenced his collegiate course, when he distinguished himself by carrying off the gold prize medal for some verses upon Milton, beside receiving other marks of distinction from the society of Pem-

broke college, and from the governors of his former school. In college he pursued his studies with unremitting ardor, making himself extensively acquainted with the Greek and Latin poets, and giving his attention especially to the study of logic, the mathematics, and to several of the sciences. At 20 he compiled, for his own use, a treatise upon architecture, a branch of the arts of which he was particularly fond. He also exhibited a talent for poetry, of which some favorable specimens were the fruits of his leisure hours. Upon completing his collegiate course, he was entered at the Middle Temple, Nov. 30, 1741, and giving himself up to the exacting study demanded in this profession, he bade adieu to the poetical pursuits so congenial to his mind in a copy of verses entitled "The Lawyer's Farewell to his Muse," which still holds its place in English literature. In 1743 he was elected a fellow of All Souls' college, and from this period continued to divide his time between the university and his chambers in the Temple, until he was admitted to the bar in 1745. Having no influential connection, and failing to acquire the art of speaking extemporaneously with ease and facility, he attracted but little notice; and after spending 7 years without obtaining sufficient employment even for the support of a man of his moderate views and inexpensive habits, he resolved to abandon his profession, to fall back upon his fellowship and devote the remainder of his life to academic pursuits. But this period of weary waiting was not unproductive of results. Upon his return to Oxford he had already conceived the plan of the celebrated work, which in a popular sense has made his name almost a synonyme for law; and one of his first undertakings, upon going back to the university, was the reading of a series of lectures upon the laws of England, which at once attracted a crowded class of young men, among whom was Jeremy Bentham, then a lad of 16, afterward destined to become one of the most formidable opponents not only of the system of Blackstone, but of the whole structure of English law, and the most subtle and sarcastic critic of the work that Blackstone has left to posterity. But the active mind of the future commentator was not confined to his lectures upon law. He wrote treatises upon different subjects connected with the government and administration of the university; established an exact and methodical system of accounts; restored the muniments of the colleges from a state of confusion to systematic order; applied his architectural taste and knowledge to the rectifying of mistakes in buildings; partially finished and superintended the erection of others, especially the Codrington library, the books of which he classified and arranged; took upon himself the superintendence of the press of the university; and that he might correct abuses and effect a thorough reform in its management, went so far even as to make himself master of the mechanical art of print-

ing; in addition to which he secured, by his legal knowledge and active exertions, several important bequests which had been left to the college. In 1749 he was elected recorder of Wallingford, an old borough town between London and Oxford, the duties of which he continued to discharge for the space of 20 years. In his periodical visits to this town he did not limit himself merely to his judicial duties, but found time to render most important service to the place. To these manifold labors were added the stewardship of All Souls' college, and the office of assessor of the vice-chancellor's court, which he filled for 6 years, and the publication of an analysis of the laws of England as a guide to his lectures, and tracts upon antiquarian, legal, political, and historical subjects. In 1750 he was created a doctor of the civil law. Mr. Viner, author of the "Abridgment of the Common Law," having bequeathed the profits of this voluminous work, together with a large sum of money, for the establishment of a professorship of the common law at Oxford, this bequest was carried into effect in 1758, and Blackstone was unanimously elected the first professor. He now set to work to execute what he had long meditated, a course of lectures, which should embrace a complete survey of the laws and political constitution of England; and in five days after his appointment he prepared and delivered the opening lecture, constituting the celebrated introduction to his "Commentaries," a production which has ever since been esteemed one of the most easy, flowing, and graceful compositions upon a subject in itself unattractive, to be found in the English tongue. This course drew together a great concourse of students, the fame of the lectures spread over England, and copies of them were transmitted to the prince of Wales, afterward George III., then pursuing his education, for his perusal and instruction. The extensive reputation he had now acquired emboldened him to make another attempt to establish himself in the practice of the law in London, which he did with the most complete success. His great capacity for the management of business, his extensive learning and his unwearied industry, were universally recognized, and he rose almost at once to eminence. In little more than a year he was offered, but declined, the chief justiceship of the common pleas in Ireland, and had scarcely more than refused this office, when he was raised to the high rank of king's counsel, and had the honor conferred upon him of a seat in parliament, by a town in Wiltshire, the county of his ancestors. He was now in his 38th year, and his worldly prospects warranting the step, he married a lady of good family, by whom he had 9 children, and was enabled to purchase a villa at Wallingford, to which he retired annually when released from his labors in London and in Oxford. For 7 years he continued the delivery of his lectures at Oxford, the remainder of his time being given to his

business in the law courts in London, to his duties in parliament, to his recordership at Wallingford, and other minor posts, the duties of which he still continued to discharge. During this time he collected and published his various tracts upon legal subjects in 2 volumes, and in 1763 he was appointed solicitor-general to the queen. When he accepted the Vinerian professorship at Oxford, he had formed the design of establishing in one of the halls or separate buildings a regularly organized college of the common law, which was in his opinion the object of Mr. Viner, and of settling himself in that seat of learning for life. But the authorities of the university rejected the plan, and Blackstone, feeling that he could not discharge the duties of the professorship properly, unless it was placed upon a footing that would enable him to give his time exclusively to it, and abandoning all hope of being able to carry out the intention of Mr. Viner, resigned, to the great regret of all who had looked forward to the establishment in Oxford of a school where the law would be taught theoretically as in foreign universities.—In the year preceding his resignation, Blackstone, having found that imperfect copies of his lectures had got abroad, and that an edition of them was about to be printed in Dublin, resolved to publish them himself, under the title of "Commentaries on the Laws of England." He accordingly commenced the publication of them in 1765, and continued it until 1769, when the work was completed in 4 vols. 8vo. Its publication was followed by a degree of laudation bordering upon extravagance. Sir William Jones, who was not only a great scholar, but a great lawyer, thought it the most correct and beautiful outline that had ever appeared of any human science; and others, among whom was Chitty, declared it to be the most valuable work that had ever been produced by the labor of a single man. These opinions, however, were not universal. Priestley attacked it with great vigor and severity for the exposition it gave of the nature of the offences against the church of England, and Bentham, who subjected it to a close legal criticism, could find nothing in it to admire but the "enchanted harmony" of its style. Both of these writers detected grave errors, which were corrected in a subsequent edition. As respects the value of this celebrated work, we are, at the present day, better enabled to form a just judgment, as it has been subjected to the test of all tests, time. So far as it treats of the principles of law in general, it is not to be compared with the great work of Montesquieu, and as an exposition of the nature or principles of the English constitution, it is greatly inferior to the work of De Lolme, who was a foreigner; but as a general treatise upon the laws of England, it must be regarded, especially when it is viewed with respect to the time at which it was written, as a production of uncommon merit. With the exception of the work of

Bracton, who wrote in the reign of Henry III., there was no treatise professing to present, as a whole, the system of English jurisprudence. The "Institutes" of Lord Coke consisted mainly of a running commentary upon a small treatise by Littleton, and though a most accurate and learned work, it was limited in its scope, and so unmethodically arranged, that none but a disciplined lawyer could comprehend it. The treatise of Sir Matthew Hale embraces merely the criminal law, and the bulk of the rules and principles, which constitute the English system, were to be collected only from an immense mass of statutes, reports, digests, abridgments, old charters, and ancient treatises. To weave out of this mass of incongruous material an orderly, well-arranged, and luminous exposition of a system of jurisprudence, the result of 8 centuries of legislation and judicial decision, was an undertaking that no one before Blackstone had been able to accomplish. To condense such a vast subject within the limits of 4 moderate-sized volumes, and present it in a style so popular and easy of comprehension, that all classes could read and understand it, was no ordinary achievement. He very justly said that he was unassisted in his extensive and arduous task by preceding examples, and acknowledged that what he had accomplished fell far short of his own ideas of perfection. The chief objection to the work is its over-estimation of every thing to be found in the English law, for if Blackstone was quick to perceive the merits that lie in the English system, he was equally blind to its defects, and this undistinguishing admiration constantly led him to suggest reasons for artificial and arbitrary rules that had nothing but precedent to support them—reasons frequently more absurd than the rules themselves. But these defects are alight when weighed against the work as a whole. The best evidence of its merits is that no writer has been able to supplant it, that it has passed through innumerable editions, that it has had no less than 10 different editors, many of them among the most distinguished and learned of legal writers, who have enriched it with valuable notes, and that at this day, nearly a century after its publication, it is still the first book which is placed in the hands of the student to give him a comprehensive knowledge of the nature of the science he is about to learn, and that it is to be found as an indispensable textbook in the library of every lawyer in this country and in England. The low estimate formed of it by Bentham is not that of the majority of legal critics and foreign jurists, who rank it with the great work of Domat. Of the wonderful care displayed in the treatment of a subject demanding on the part of a writer the greatest condensation and clearness, there is but one opinion. Chancellor Kent, after an exposition in his "Commentaries" of one of the most intricate and difficult parts of the law of real property, is so little satisfied with his own performance, that he advises his reader to peruse

Blackstone's chapter upon the same subject, with the remark that he had read it many times, but never without mingled feelings of delight and despair.—In parliament Blackstone was a uniform supporter of the government. He participated occasionally in the discussions, but exhibited no talent as a speaker or debater. Upon one occasion, when he undertook to satisfy the house that, by the laws of England, Wilkes as an expelled member was ineligible to reelection, Granville completely discomfited him by citing a passage from his own book. The passage was not incapable of explanation, but, according to Junius, Blackstone looked thunderstruck, and was unable to make any reply. Sir William Meredith attacked him in a pamphlet for his inconsistency, which he answered by another, when Junius assailed him, and he became involved in a discussion with that writer. But, as in his controversy with Priestley, he exhibited no skill in this kind of warfare. In both cases his defence was calm, dignified, and plausible, but it availed little before the vehement rhetoric of Priestley, or the stinging sarcasms of Junius. The assault of Junius commended him but the more strongly to the government, and when Mr. Dunning resigned in 1770 he was tendered the office of solicitor-general; but feeling himself deficient in the forensic qualities demanded by this office, he declined it. In a month after, a judgeship becoming vacant in the court of common pleas, the place was offered to him, and was accepted. At the request of Justice Yates, who wished to leave the court of king's bench, he, with the assent of the government, exchanged for the king's bench; but upon the death of Justice Yates, a few months after, he was again made judge of the common pleas, and continued in that office for the remainder of his life. Assiduous and attentive to his judicial duties, he still found leisure for other employments, and gave much of his time to the subject of prisons, earnestly advocating the modern penitentiary system as a substitute for transportation. When he had passed his 50th year, the severe midnight studies of his youth, and the arduous sedentary labor of his manhood, began to tell upon his constitution. He was affected by a nervous disease, and was subject to occasional attacks of gout, which increased as he grew corpulent, and were aggravated by the objection he always had to bodily exercise. For 10 years, however, he continued regularly to discharge the duties of his judgeship, interrupted by occasional fits of illness, but at the end of that time he began to exhibit symptoms of dropsy, and, coming up to London to attend the opening of the court, he was seized with a drowsiness and stupor that baffled all the arts of medicine. For several days he remained insensible, and expired at his house in London in the 57th year of his age.—Throughout the active and laborious life of this remarkable man, he was influenced by the ever-prevailing desire to make himself useful. With all his elegant attainments, ex-

quisite taste, and varied learning, he had a constant eye to utility, devoting himself chiefly to those pursuits which he considered the most serviceable in the ordinary affairs of men. Whether in his own matters, or in the discharge of public duties, he was exact and methodical, remarkable for his punctuality, his probity, and conscientiousness. As a judge he was honest and patient, though subject to a constitutional irritability which occasionally broke forth beyond his power of control. A heavy brow, which, being short-sighted, he was in the habit of contracting, gave his countenance, as we see it in his portrait by Gainsborough, an air of sternness; and a natural reserve proceeding from a diffidence that he never entirely got rid of, together with a ceremonious observance of what he thought essential to the gravity and dignity of the judicial station, gave outwardly the impression of pride; and many, from his occasional irritability, thought him ill-natured, but he was in fact a most amiable man, cheerful, agreeable, and even facetious, a kind father, an affectionate husband, and a very faithful friend. He managed his affairs with great prudence and economy, but was liberal within his means, and always benevolent. In religious matters he was earnest and sincere, without affectation, profoundly believing in the church of England, and conforming strictly to its rules and practices. As a public man, the tendency of his mind inclined him strongly to the support of existing institutions, but at the same time he was noted for his moderation, for his contempt for the motives that influence, and which are frequently the mainspring of, party contests, and for his generally tolerant spirit. Indeed, in his conduct in all public affairs, whether as a statesman, a judge, or as a prominent member of the church of England, he was far more tolerant than might be supposed from his writings. Before his death he communicated some valuable notes and emendations upon Shakespeare to Malone, which were made use of by Stevens, in his edition of the poet; and he left the materials for 2 volumes of reports, which were published by his executors for the benefit of his family, but as they consisted mainly of imperfect notes that required his supervision, they have added nothing to his reputation. Having a large family to bring up, he was not able, with all his care and economy, to leave much behind him; but George III., considering that he had rendered a great service to the nation by his "Commentaries," made a liberal and ample provision for his wife and children. At his own request his remains were interred in the church at Wallingford, which his architectural taste had embellished. A marble statue was erected to his memory at Oxford; his arms were directed to be emblazoned upon the windows of one of the principal halls, and his portrait was hung among the worthies of the college.

BLACKSTONE CANAL, laid out in 1828, from Worcester, Mass., to Providence, R. I., 45

miles, along the valley of the Blackstone river, with chartered privileges for the production and sale of water power. It was completed in 1829. Upon the introduction of railroads, it was superseded by one laid out along its general course, and only those portions of the canal remain which are used for water power.

BLACKSTONE RIVER rises in Paxton and Holden townships, Worcester co., Mass., and flows S. E. into the state of Rhode Island, where it is called the Pawtucket. It affords abundant water power, and for a great part of its course flows through an almost continuous village of manufacturing establishments. The scenery of the narrow valley is attractive. The soil is highly cultivated, and with the opportunities of both the canal and the river for the use of water, the meadows for many miles have been carefully graded for irrigation. The water is let into ditches, over the slopes of which it flows in a thin sheet, and is received in others, so as to be used several times over. It is usually let on after the crop of grass is removed, and is kept on about 8 days. By this means, 4 or 5 crops are obtained in a season.

BLACKWALL, ANTHONY, an English school-master and author, born in 1674, died at Market Bosworth in Leicestershire, April 8, 1780. In 1725 appeared his "Sacred Classics Defended and Illustrated," in 2 vols.

BLACKWELL, ALEXANDER, a native of Aberdeen, who practised medicine in London, set up a printing establishment, became a bankrupt in 1784, and was supported by the sale of a herbal, containing drawings and descriptions of the plants most useful in the practice of physic, prepared by his wife Elizabeth. In 1740 he went to Sweden, and was afterward tried upon a charge of conspiring against the royal family of Sweden, and beheaded Aug. 9, 1748.

BLACKWELL, ELIZABETH, the first woman who ever received the degree of M. D. in the United States, born at Bristol, England, in 1821. Her father removed to this country, with his family, in 1831, and settled in New York as a sugar refiner, but meeting with reverses in business, he emigrated in 1837 to Cincinnati, Ohio, where he died a few months afterward, leaving a widow and 9 children almost destitute. Elizabeth, then a girl of 17 years, opened a school, which she conducted successfully for several years. But her energetic temperament and strong desire for the acquisition of knowledge demanded a wider field; and long reflection having persuaded her that some avenue should be opened to women whom either necessity or choice impelled to gain a subsistence by their own exertions, she felt that her path of duty lay in that direction. A friend suggested to her the study of medicine as a profession for which she was peculiarly adapted, and one which woman could well fill. It so happened that the art of healing was one for which, up to that time, she had always felt a peculiar repugnance. The suggestion, however, after mature consideration, commended itself to her bet-

er judgment, and she consulted several friends in regard to it, and, among others, some physicians of eminence. She received on all hands only discouragement. But as the objections to such a plan of life were based rather upon the difficulties to be encountered than upon any inherent impropriety or unreasonableness in it, they only served to quicken her zeal and determination. She resolved to become a physician, and to return again to teaching to acquire the requisite means of education. A situation as governess was found in the family of Dr. John Dixon, of Asheville, N. C., where she remained a year, having access, during that time, to a medical library, and receiving from Dr. Dixon some direction as to her reading, but no encouragement in her purpose. At the end of the year she removed to Charleston, S. C., still acting as a teacher of music, but pursuing her studies with the aid and sympathy of Dr. S. H. Dixon, subsequently professor of the institute and practice of medicine in the university of New York.—Miss Blackwell next went to Philadelphia, and passed 6 months in study under Dr. Allen and Dr. Warrington, of that city. During that time she made formal application to the medical schools of Philadelphia, New York, and Boston, for admission as a student. In each instance the request was courteously but firmly denied, on the ground of a want of precedent for such an admission, and of the impropriety of such an innovation upon established custom. Several of the professors, however, avowed a sincere interest in her hopes and purposes, and some of them urged her to seek admission into one or another of the schools under the disguise of a feigned name and male attire. She declined to take into consideration any such suggestion, for, though anxious to obtain a medical education for herself, she was hardly less desirous of asserting her right to it as a woman. Undismayed by these difficulties, however, she next made application to 10 other medical schools in different parts of the country, which was rejected by all except those at Geneva, N. Y., and at Castleton, Vt. At Geneva, the faculty, after expressing their own acquiescence, laid the proposition before their students, leaving the decision with them. The young men unanimously assented to the reception of the new pupil, and pledged themselves that no conduct of theirs should ever cause her to regret the step she had taken. It is to their credit that they faithfully observed this pledge during the 2 subsequent collegiate years that she passed among them. Here Miss Blackwell took her degree of M. D., in regular course, in January, 1849. During her connection with the college, but when not in attendance there upon lectures, she pursued a course of clinical study in Blockley hospital, in Philadelphia. The spring after her graduation she went to Paris, and remained 6 months as a student in the *Maternité*, devoting herself to the study and practice of midwifery. The next autumn she was admitted, as a physician, to walk the hospital of St. Bar-

tholomew, in London, where she could not have been received as a student. After nearly a year spent in St. Bartholomew's she returned to New York, where she has since practised her profession with credit and success.

BLACKWELL, THOMAS, a Scottish writer, born in Aberdeen, in 1701, died in 1757; was professor of Greek in Marischal college, and in 1748 took charge of that institution. He published works on Homer and various other classical subjects.

BLACKWOOD'S MAGAZINE, a monthly periodical published in Edinburgh, one of the leading organs of the tory party of Great Britain. Its name is derived from William Blackwood, a sagacious Edinburgh bookseller, who projected it, published the first number April 1, 1817, under the title of "Blackwood's Edinburgh Magazine," and was its proprietor, and, after the first 4 numbers, its editor during the remaining 17 years of his life. He was a zealous partisan of tory principles, and from his first conception of the magazine, determined to make it an assailant of the "Edinburgh Review," which, established and supported by young men and whigs, had for 15 years been offering violence to the cherished convictions and tastes of the tory party. The first numbers were edited by 2 journalists, of repute at the time, Pringle and Oglehorn, and though containing contributions from Sir Walter Scott and Henry Mackenzie, were yet truly characterized as "dull and decent." After the 4th number Blackwood quarrelled with and dismissed his editors, took the editorial care upon himself, and looked about for assistants. He speedily obtained the services of James Hogg, who, by his "Queen's Wake," had just taken rank among the first poets of Scotland, of John Wilson, then in the flush of vigorous manhood, of the gifted and highly cultivated J. G. Lockhart, and of the German scholar and critic, R. P. Gillies, afterward the Kempferhausen of the "Noots." The first article which gave a distinctive and formidable character to the magazine, was that entitled "Translation from an ancient Chaldee Manuscript," for October, 1817. It was couched in biblical language, and divided into chapter and verse, but was in reality a most vigorous and severe satire upon the noted members of the whig party in Edinburgh. The number containing it created astonishment, dismay, and wrath, throughout the capital; it was declared not only unpardonable for its personalities, but an attack on the interests of religion and society, and a ribald and profane parody upon the Bible. Blackwood, in great alarm, determined to withdraw the offensive article, which consequently appeared in only the first 200 copies, and an edition of the magazine containing it is now a rare literary curiosity. The main authorship of this literary rocket is due to Hogg, though all the wits of Maga added points and bitterness to it, and from this time "Blackwood" was looked for, month after month, in the expectation of harsh personalities, an ex-

pectation which at length was not disappointed. The list of writers was now increased by the accession of Dr. Maginn, a learned Irishman, John Galt, the novelist, and Robert Syme, the Timothy Tickler of the "Noctes," and "one of the greatest Tories in all broad Scotland." The overture to the renowned "Noctes Ambrosianæ" was given in 1819 in the series entitled, "Christopher in the Tent," and from this time the *eidolon* called Christopher North was the recognized editor of the magazine. The first of the "Noctes Ambrosianæ" appeared in March, 1822. The series continued till February, 1835, having extended to 71 numbers, and won for the magazine great attention and favor throughout Great Britain, and in America. Dr. Maginn was the principal writer of the earlier of them, but soon the master mind of Wilson became predominant in them, and the series became more valuable as years brought more sober thought to the coterie of writers. The departure of Lockhart to London, in 1826, to edit the "Quarterly Review," took away much of the personal and caustic sarcasm of the magazine; under the ascendant of Wilson more generous impulses prevailed, and the onslaughts upon what was termed the cockney school of literature, which had exceeded in virulence any thing ever before introduced into respectable periodical literature, became less frequent. The contributors to "Blackwood," from this time, embrace many of the most eminent writers of Great Britain. Wordsworth and Coleridge both gave some of their thoughts to the public through this avenue, and Charles Lamb, in his later years, here indulged his delicate fancy. Here Caroline Bowles published her chapters on churchyards, and her simple and touching lyrics; Allan Cunningham wrote "prose by a poet," in the "Adventures of Mark Macrobine;" De Quincey poured out diffusely his subtleties, and Mrs. Hemans occasionally occupied a page or two with some of her noblest poems. Here the attractive novels of Samuel Warren were first published; the "Men of Character" of Douglas Jerrold, the "Marston" of Croly, the "My Cousin Nicholas" of Ingoldsby, the delightful "Literary Lore" of John Sterling, the "Imaginary Conversations" of Walter Savage Landor, and the "Caxtons" and "My Novel" of Bulwer. Here, too, appeared several striking articles, chiefly on American politics and literature, by the American poet and critic, John Neal. Since the death of Wilson, in 1854, his son-in-law, William E. Aytoun, who had been accustomed from his school days to contribute to "Blackwood," has been one of the most prominent of the writers for it. The circulation of "Blackwood's Magazine" has never been lower than 7,500 a month; it has been as high as 10,000, and some numbers have been reprinted more than once; at present the sale is not less than 9,000 a month.

BLADDER. The bladder is a musculo-membranous bag, cyst, or pouch, which serves as a reservoir for the urine, secreted in the kidneys. It is called *vesica urinaria*, to distinguish it

from the gall-bladder, a small cyst connected with the liver and the biliary ducts as a reservoir for bile. The bladder is situated in the pelvis, immediately behind the *symphysis pubis*, and in front of the rectum or terminal portion of the intestines, in the male—in front of the uterus and vagina, in the female. Thus placed in the lowest portion of the trunk in front, it communicates by means of 2 long tubes, called ureters, with the 2 kidneys, placed high up in the back, just above the lumbar region, on each side of the vertebral column. It communicates with the exterior by means of a single tube called the urethra, through which the urine is voided. In infancy it is of a pyriform shape, and situated almost entirely in the abdomen; it undergoes a change of form in the adult, and sinks deeper in the pelvic cavity. It then assumes the shape of a short oval, compressed in its anterior and posterior walls; its lower surface expands on the rectum, and forms what is termed by anatomists the *bas-fond* of the bladder. In the female, its transverse diameter is greater than it is in the male, owing to the position of the uterus and vagina between the bladder and the rectum. It increases in dimensions with advancing age, and is larger in females than in males; probably from habitual distention, arising from constraint and female modesty. The direction of the bladder is oblique, being inclined forward and upward. It is retained in its position by appropriate ligaments. Anatomists have divided it into 6 regions or surfaces, for the facility of description and surgical operation: these are named anterior, posterior, superior, inferior, left and right lateral. The anterior surface lies behind the symphysis pubis, with which it is connected by loose connective tissue. When distended, the bladder rises, and its anterior surface comes in contact with the recti muscles of the abdomen. The posterior surface is covered by the peritoneum, which is reflected upon it from the rectum in the male, and from the uterus and vagina in the female. The lateral and superior regions are partially covered by the peritoneum. The inferior region, or *bas-fond*, is the most important in a surgical point of view. It is bounded before by the prostate gland, and behind by the peritoneum. Attached to it, in the male, we find the *vesiculae seminales* and the *vasa deferentia*, which converge to the prostate gland, leaving a triangular space, where the bladder is only separated from the rectum by a quantity of fatty connective tissue surrounding numerous small vessels, chiefly veins. In the female, this region rests on the vagina, which separates it from the rectum. The anterior and inferior regions of the bladder being left uncovered by folds of the peritoneum, enables the surgeon to perform operations on those parts without injuring that membrane, which is so liable to dangerous inflammation from wounds.—The walls of the bladder are composed of 3 layers or coats, united by connective tissue: an internal or

mucous membrane, a middle or muscular coat, and an external or serous coat, formed by folds of the peritoneum. The muscular coat is composed of pale fibres interlacing in all directions, and enabling the bladder to contract so perfectly as to expel every drop of its contents. The neck of the bladder differs in structure from the rest of the organ; being composed of a somewhat fibrous whitish substance, and forming a connecting medium between the bladder and the urethra. Its posterior part rests upon the rectum; its anterior is surrounded below and at the sides by the prostate gland, which is peculiar to the male. This gland is composed of an aggregation of mucous follicles, forming 8 lobes, 1 on each side of the neck of the bladder, and 1 below, communicating by means of small ducts with the urethra. The inner coat or lining of the bladder, being a portion of the genito-urinary mucous membrane, not only lines the bladder, but is prolonged upward through the ureters into the kidneys, and downward along the urethra. It is of a pale rose-color, with a smooth surface when the bladder is distended, and corrugated when empty. This membrane secretes a viscid fluid termed mucus, which protects it from the acrimony of the urine with which it would otherwise be in contact.—The secretion of the urine is performed by the kidneys, which are constantly active, without any apparent alternation of action and repose, although within a given period they do more work at one time than another; as a machine which never stops, may move more rapidly at one time than another. The urine thus secreted dribbles incessantly along the ureters, drops into the bladder, where it accumulates until the walls are distended, and a general uneasy sensation is produced which calls for an evacuation of the contents.—Congenital malformations of the bladder are not unfrequent. Sometimes the bladder is altogether wanting; and in such cases the ureters empty into the rectum, as into the cloaca of birds, or at the pubes, or directly into the urethra. A still more frequent malformation is that in which, the lower portions of the recti muscles being imperfect, and the anterior wall of the bladder deficient, the posterior wall is protruded and forms a red fungus-like tumor above the pubes. The tumor presents 2 orifices, which are the mouths of the ureters, from which the urine constantly dribbles. Blasius describes a case in which the bladder was double. Mollinetti, it is said, found in a female subject 5 kidneys, 5 ureters, and 5 bladders.—Inflammation may affect the coats of the bladder singly or together. When the mucous membrane is inflamed, there is a sense of irritation and a constant desire to discharge the contents. Ulcers, gangrenous spots, and indurations of various kinds may be produced by inflammation. The secretion of the mucous membrane may be increased or altered, constituting what is termed catarrh of the bladder. The mucous membrane is sometimes found in a varicose

state. In other cases it gives origin to cysts of different kinds, and fungous growths; the latter occur mostly in old people. Various accidents and diseases may prevent the bladder from evacuating its contents, in which case it becomes excessively distended, and, unless relieved, inflammation ensues, a portion mortifies, through which the urine escapes into the abdomen, and speedy death is the result. After 8 days' retention the bladder usually attains its utmost limits of distention, and, if not relieved, the contents are evacuated in small quantities, as they would be in a case of mere incontinence of urine; and it is of great importance, therefore, not to mistake retention for incontinence where there is this point of similarity in their respective symptoms. When there is danger in delay, and a catheter cannot be introduced, the bladder may be punctured, either through the perineum or the rectum, or above the pubes, as it is not covered by the peritoneum in these regions.—Where urinary calculi exist in the bladder, they are removed by surgical operations. When small, they may be extracted through the urethra by a pair of forceps invented for the purpose; when large, they may sometimes be reduced into small pieces, minute enough to pass away with the urine; and where this is not practicable, they may be removed by cutting into the bladder.—In the whole class of birds there are no urinary bladders; the ureters descend from the kidneys and open into the cloaca, a musculo-membranous bag, which takes the place of the rectum, the uterus, and the bladder of the higher animals, and serves as a reservoir for solid excrement, for urine, and for eggs. In these animals the urine dilutes the feces, and forms the carbonate of lime, or hard substance of the shell. The urinary bladder exists in several genera and species of fishes.

BLADEN, a south-eastern county of North Carolina, with an area of about 800 sq. m., bounded on the N. E. by South river, and intersected by the Cape Fear, which is here navigable by steamboats. The surface is generally level, and diversified by a number of small and beautiful lakes, abounding in excellent fish. Much of the land is occupied by extensive pine forests, valuable for the tar and turpentine which they yield in large quantities, and for the preparation of which there were in the county in 1850, 6 distilleries and 41 manufactories. The agricultural products during the same year amounted to 217,415 bushels of corn, 100,523 of sweet potatoes, and 78,530 pounds of rice. The county was organized in 1784, and was named in honor of Martin Bladen, one of the lords commissioners of trade and plantations. Elizabeth is the capital. Pop. in 1850, 9,787, of whom 4,358 were slaves.

BLADENSBURG, a small town in Prince George county, Maryland, on the east branch of the Potomac, about 6 miles east from Washington, with about 150 houses. It is a post town and the centre of a large agricultural population, at one time rivalling or contending with

Alexandria, Va., and with Georgetown. Near it are many large plantations, now, however, nearly exhausted. At the bridge over the Potomac west of Bladensburg, the battle with the English which preceded the capture of Washington by Cookburn and Ross, took place Aug. 24, 1814.

BLADON, a parish in the co. of Oxford, England. It is the seat of an almshouse for poor women, which in 1798 was endowed by the duchess of Marlborough with £8,000 consols.

BLAEU, or BLAUW, WILLEM, a learned printer of Amsterdam, died in 1688, the friend and pupil of Tycho Brahe. His atlas, treatises of the globes, and other works, have preserved his memory.

BLAGRAVE, JOHN, the author of several scientific works, chiefly mathematical, born at Sanning, in Berkshire, died in 1611. Among his published writings are, "A Mathematical Jewel," *Astrolabium uranicum generale*, and "The Art of Dialling."

BLAINE, EPHRAIM, an officer in the revolutionary war, belonging to the Pennsylvania line, died at Carlisle, Pa., in 1808. He entered the army as a colonel, at the commencement of the war, and was subsequently made commissary general. His services were gallant and patriotic. He was with Washington in many of the most trying scenes of the revolution, and enjoyed the confidence of his chief to the fullest extent. During the "dark winter" at Valley Forge, the preservation of the American army from starvation was in a great degree owing to the exertions and sacrifices of Col. Blaine.

BLAINVILLE, HENRI MARIE DUROTAY DE, a French naturalist, born Sept. 12, 1777, at Arques, near Dieppe in Normandy, died in Paris, May 1, 1850. He received his first rudiments of education from a Catholic priest with whom he was placed in a neighboring town, at a very early period. He was afterward sent to a boarding school, and from that to the military school of Beaumont-en-Auge, and placed under the direction of Benedictine monks. This establishment was demolished by the revolution of 1792, and De Blainville returned home. In 1794 or 1795 he entered the school of design at Rouen. In 1796 he went to Paris, where he entered as a pupil in the studio of Vincent, the historical painter. There he pursued his studies for some time, being exempted from the conscription in consequence of an accident which rendered him ineligible for military service; and sometimes went to hear lectures on science in the college of France, and on one occasion to hear Lefebvre-Gineau on natural philosophy. He became deeply interested in the study of physical science, and soon made the acquaintance of the professor. In company with one of his young friends, Constant Prévost, he began to frequent the lectures on natural history at the garden of plants, and at the college of France. The lectures of Cuvier were then very celebrated, and De Blainville became one of his most diligent

disciples and attentive hearers. His studies of art gave way to those of science. He became acquainted with scientific men, and following the advice of Duméril, at that time assistant professor to Lacépède in the museum of natural history, he gave all his time to the study of human anatomy. He thus became a regular student of medicine, and Aug. 30, 1808, obtained his degree of M. D. On that occasion his thesis was entitled "Propositions extracted from an Essay on Respiration, followed by practical Experiments on the eighth pair of Nerves in Respiration." During some years, in concert with the German naturalist, Oppel, he gave great attention to the study of reptiles, and myology became a favorite branch of study with him. Cuvier became interested in his studies, and requested his coöperation in a work on comparative anatomy, on which the great master had been long engaged, but not with a view to an early publication. De Blainville accepted, and took his place in the laboratory of the illustrious professor. Soon afterward Cuvier asked him to supply his place as professor at the college of France and at the Athenæum. This position gave eminence to De Blainville; and a vacancy occurring in the chair of anatomy and zoology in the faculty of sciences of Paris, De Blainville sustained, March 31, 1812, his celebrated thesis on the *ornithorynchus*, or duck-bill, and obtained the professorship. From unknown causes Cuvier and De Blainville became estranged from each other about this time, and never afterward were reconciled. The temper of De Blainville was irascible, and it is conjectured that he could not easily brook difference of opinion on any of his favorite ideas. He evidently undervalued the labors of Cuvier, and the latter took no notice of him or of his views, after the rupture. In 1814, the section of zoology placed De Blainville first on the list of candidates for the place left vacant by the death of Olivier, in the academy of sciences; but Latreille was elected. 2 years later, Duméril was elected on the death of Tenon; but in 1825, De Blainville was elected successor to Lacépède, as a member of the academy of sciences. At the death of De Lamarck, Dec. 18, 1829, the chair of natural history, at the garden of plants, was divided into several professorships, and De Blainville was appointed to the department of mollusca, zoophytes, and worms. On July 23, 1832, he left this chair to become the successor of Cuvier, in the chair of comparative anatomy. During the 18 years that De Blainville occupied this place, he continued the work of Cuvier on the fossils of extinct species; but while Cuvier had only consulted the skeletons of living species as a means of comparison with fossil species, De Blainville attempted to treat the osteology of all types of organism, living as well as extinct, under the title of *Ostéographie, ou description iconographique comparée du squelette et du système dentaire des cinq classes d'animaux vertébrés récents et fossiles*. The work, however, was never finished; about 80 genera of mammalia only being

treated at the time of his death, which occurred suddenly in a railway carriage, as he was proceeding on a visit to his niece at a short distance from Paris.—The scientific works of De Blainville are very numerous, and treat of divers questions and investigations in relation to the animal kingdom. Like Cuvier, his whole life was spent in the study of comparative anatomy and zoology. In his *Prodrome d'une nouvelle distribution méthodique du règne animal* (Paris, 1816), he pointed out several modifications in the classification of animals which have since been generally accepted. In his *Dictionnaire d'histoire naturelle* he published a remarkable treatise on worms, which marks an epoch in the progress of that branch of science. Beside numerous contributions to scientific periodicals, he published a work entitled *Faune Française* (Paris, 1821, 1830), a *Cours de physiologie générale et comparée, professé à la faculté des sciences de Paris* (1833), *Manuel de malacologie et de conchyliologie* (Strasbourg, 1825-'27), and *Histoire des sciences naturelles au moyen âge* (Paris, 1845). In the classification of animals, De Blainville was decidedly of opinion that the external form should be the leading characteristic feature, in forming groups and families of allied species; while other naturalists maintain that the internal structure of animals is of more importance in pointing out affinities and similarities of form and structure, as guides to a natural method of classification.

BLAIR, a S. W. county of Pennsylvania, with an area of 650 square miles. It is drained by Olover creek, the Little Juniata, and one of its branches. The surface is very rugged, and nearly half of the land is unfit for cultivation. The Alleghany mountains form the western boundary; Dunning's and Brush mountains traverse the interior, and in the eastern part of the county rises Tussey's mountain. Between these ridges lie fertile and highly cultivated valleys, the soil of which is well adapted to the production of grain and hay. Bituminous coal is found in the western part, and there are numerous and valuable mines of iron. The county yielded in 1850, 267,349 bushels of wheat, 145,851 of corn, 173,017 of oats, 13,637 tons of hay, and 203,088 pounds of butter. There were 80 flour and grist mills, 12 saw mills, 8 iron mining establishments, and a number of furnaces, forges, factories of various kinds, tanneries, &c. The public schools contained 3,249 pupils; there were 89 churches, and 4 newspaper offices. Blair county was formed in 1845-'6, out of portions of Bedford and Huntingdon, and was named in honor of John Blair, one of the first settlers of this part of the state. Capital, Hollidaysburg; pop. in 1850, 21,777.

BLAIR, FRANCIS PRESTON, an American journalist and politician, born at Abingdon, Washington co., Va., April 12, 1791. His father, James Blair, afterward attorney-general of Kentucky, removed to that state about 1800; the son was graduated at Transylvania university; studied law, but from ill health and weakness

of voice never engaged in its practice; volunteered, however, as a private soldier in 1812, and marched toward the Canadian frontier, but was taken sick and left behind on the way. Early a politician, he was a friend of Mr. Clay, and supported him for the presidency in 1824, but separated from him after he gave his vote for J. Q. Adams and entered the Adams administration; but this did not extinguish their personal friendship, which remained even after the ardent controversies in which they were subsequently engaged. Before this final separation from Mr. Clay, Mr. Blair had diverged from his policy in various local questions, and still more in opposing the U. S. bank, and in contending for the power of the states to tax its branches. When, in the first year of Gen. Jackson's administration, the nullification movement was developed, an article against it, written by Mr. Blair, in a newspaper of Kentucky, attracted the notice of the president, and resulted in an invitation to Mr. Blair, though he was then personally unknown to Gen. Jackson, to remove to Washington and become the editor of a democratic journal to be established there. Under such auspices the "Globe" was commenced in Nov. 1830; and there soon grew up a most intimate and confidential relation between the president and the editor, which continued until Gen. Jackson's death. Mr. Blair retained the control of the "Globe," notwithstanding the opposition of several prominent democrats who were inclined to favor the re-chartering of the U. S. bank, throughout Gen. Jackson's 2 terms of office; and subsequently, through the terms of Van Buren, of Harrison, and of Tyler, until the accession of Mr. Polk to the presidency in March, 1845, who required him to sell that journal to Mr. Ritchie, on the ground that the change was necessary to the harmony of the democratic party. Mr. Polk afterward besought him to resume his position as editor, but he declined, as he did the offer of the Spanish mission for himself and of another diplomatic appointment for his son. He retired to Silver Spring, Montgomery co., Md., where he has since been successfully engaged in agriculture. In the presidential election of 1848, he withdrew from the democratic party and supported Mr. Van Buren and the Wilmot proviso. After the repeal of the Missouri compromise, he took a prominent part in the organization of the republican party, and in the attempt, in 1856, to elect Col. Fremont to the presidency.—FRANCIS PRESTON, JR., a leader of the free-labor or emancipation party in Missouri, 8d son of the preceding, born at Lexington, Ky., Feb. 19, 1821; was graduated at Princeton college, N. J., in 1841; and took up his residence in St. Louis, Mo., and devoted himself to the law. In 1845 he made a journey to the Rocky mountains with a party of trappers for the improvement of his health; and on the breaking out of the Mexican war he joined the force under Kearney and Doniphan in New Mexico, and served as a private soldier until

1847, when he returned to St. Louis and resumed the practice of his profession. In 1848, like his father, he gave his support to the free-soil party and to Mr. Van Buren, and in a speech delivered at the court-house in St. Louis contended against the extension of slavery into the territories of the union. In 1852 he was elected from St. Louis co. to the legislature of Mo., as an avowed free-soiler; and he was re-elected in 1854, though Col. Benton, the congressional candidate of his party, was beaten. In 1856 he was himself returned to congress from the St. Louis district, over Mr. Kennett who had defeated Col. Benton 2 years before. In Jan. 1857, he delivered an elaborate speech in the house of representatives in favor of colonizing the black population of the United States, in Central America. Mr. Blair has also been an editor and writer of the "Missouri Democrat," a daily journal of St. Louis, which constantly advocates the political and economical principles with which he has become identified.

BLAIR, HUGH, a Scotch divine and author, born in Edinburgh, April 1, 1718, died Dec. 27, 1800. In 1759 he delivered his course of lectures on rhetoric and belles-lettres, which were so well received that the king was induced to establish a professorship of rhetoric and polite literature at the university of Edinburgh, and to appoint Dr. Blair its first professor. In 1768 he published a dissertation on the authenticity of Macpherson's "Ossian," and in 1777 the first volume of his sermons, subsequently followed by 4 others. These discourses were not only sought after in England and Scotland, but were even translated into foreign languages. They were dedicated to the queen, at whose instance a pension of £200 a year was conferred on their author. To this annuity an additional £100 was added in 1788, on account of his failing health. In that year his lectures were published in 3 volumes, 8vo.

BLAIR, JAMES, first president of William and Mary college, in Virginia, a native of Scotland, died Aug. 1748, at an advanced age. Not succeeding in that country as a minister of the Episcopal church, he went to England, where he became intimate with Oompton, bishop of London, who sent him as a missionary to Virginia in 1685. In this capacity he evinced so much ability and zeal that he was raised to the high office of ecclesiastical commissary of the Virginia church in 1689. He was so anxious to promote the educational interests of the colonists that he undertook a voyage to England, after the accession of William and Mary, to raise funds and obtain a patent for the erection of a college in his adopted country. He succeeded beyond his most sanguine expectations, and on his return he superintended the erection of a college, which he named after the reigning sovereigns, and of which he was president for nearly 50 years. He was also president of the council of Virginia and rector of Williamsburg for many years. His sermons were published in London in 1722, in 4 vols. 8vo.

BLAIR, JOHN, one of the associate judges of the supreme court of the United States, born in Virginia in 1782, died Aug. 31, 1800. He was a judge of the court of appeals in his native state in 1787, and a member of the convention which framed the constitution of the United States. After the establishment of the federal government, Washington appointed him one of the federal judiciary. This office he held till his death, which took place at the age of 68. He was distinguished for the admirable virtues of his private character, no less than for the ability with which he discharged the functions of public office.

BLAIR, JOHN, chronologist and geographer, born in Scotland, died June 24, 1783. In 1754 he published his "Chronological History of the World, from the creation to A. D. 1753." He now received in succession several ecclesiastical preferments, was appointed, in 1757, chaplain to the princess dowager of Wales, and in 1763 was selected to accompany the duke of York on a tour to the continent.

BLAIR, ROBERT, Scottish poet, author of the "Grave," born at Edinburgh in 1699, died Feb. 4, 1746. He was minister of Athelstaneford, in East Lothian, where he spent most of his life.

BLAIR-ATHOL, a village and parish of Scotland, in the county of Perth, 76 miles from Edinburgh; pop. in 1851, 2,084. It contains Blair Castle, a seat of the duke of Athol, and formerly a baronial fortress, occupied by Montrose in 1644, stormed by Cromwell's troops in 1653, and defended by Sir Andrew Agnew, in 1746, against a portion of the pretender's army. The pass of Killiecrankie, famous as the scene of the victory of the Highlanders under Dundee over King William's troops, under Mackay, is distant about 2 miles from the castle. Two miles to the westward are the falls of Bruar, celebrated by Burns.

BLAIRSVILLE, the largest post borough of Indiana co., Pennsylvania, situated on the Conemaugh river and on the Pennsylvania canal, at a distance of 75 miles by canal from Pittsburg, and about 8 miles from the central railroad. It has facilities for an active trade, and is the shipping point of nearly all the grain, pork, lumber, and coal exported from the county. It has a number of substantial buildings, 5 or 6 churches, 2 newspapers, and a handsome bridge, which crosses the Conemaugh river with a single arch of 295 feet. Pop. 1,135.

BLAIRSVILLE, the capital of Union co., Ga., is situated in the midst of a valuable mineral region, possessing quarries of marble and rich mines of gold and iron. The surrounding scenery of the Blue Ridge can hardly be surpassed for grandeur and magnificence. Blairsville contains a court house, a school, 2 hotels, and a few stores.

BLAKE, FRANCIS, a New England lawyer, born in Rutland, Mass., Oct. 14, 1774, died in Worcester, Feb. 28, 1817. He graduated at Harvard college at a very early age, was admitted to the bar in 1794, and commenced practice in Rutland,

whence he removed to Worcester in 1802. As an advocate he was the acknowledged head of the bar of his own and the adjoining counties. Two or 3 orations and tracts are the sole printed memorials of his splendid talents.

BLAKE, JOHN LAURIE, D. D., an American author and Episcopal clergyman, born at Northwood, N. H., Dec. 21, 1788, died at Orange, N. J., July 6, 1857. His early years were passed upon his father's farm, where he labored diligently during the summer months, and attended the district school in the winter. As he grew up he manifested a decided predilection for mechanics, and when about 18 years of age was apprenticed to a cabinet maker, with whom he worked 2 years, and then bought the remainder of his time and went to Salem, Mass., where he labored as a journeyman. Under the ministry of the Rev. Samuel Worcester his attention was turned to religious subjects, and he finally made a public profession of religion in connection with Mr. Worcester's church. Very soon after this he formed the determination to procure a collegiate education, and at the age of 17 quitted the work-bench, and entered Phillips academy at Exeter, N. H., then under the care of the celebrated Dr. Benjamin Abbot, to prepare for college. In 1808 he entered the sophomore class of Brown university, and graduated in 1812. In 1814 he made his first appearance as an author, publishing at that time his "Text Book of Geography and Chronology," a work of which several editions were subsequently sold. In 1818 he was licensed by the Rhode Island association of Congregational ministers, but preached but little in that connection. Having formed the acquaintance of the Rev. Dr. Crooker, then rector of St. John's church, Providence, he became interested in the church service, and, after considerable hesitation, determined to enter the ministry of the Episcopal church. Accordingly, he was admitted to deacon's orders in 1815 by Bishop Griswold, and became the fourth Episcopal clergyman in the diocese of Rhode Island. Soon after his ordination he organized the parish of St. Paul's at Pawtucket, now one of the largest in the diocese, where he remained nearly 5 years, and was eminently successful in his ministry. In 1820 he returned to New Hampshire, and taking temporary supervision of the churches in Concord and Hopkinton, established at the former place a young ladies' seminary, which, in 1822, he removed to Boston, where it attained a very high reputation. He continued in this school till 1830, having charge also of St. Matthew's church in that city most of the time. It was here that he fairly commenced his career of authorship, publishing first the text books which he had prepared for his own classes, the peculiar and original features of which led to their extensive introduction in other schools. Subsequently, he was connected for a time with the "Literary Advertiser" and with the "Gospel Advocate," as editor, and rendered efficient service to the public schools of Boston

as an active member of the school committee for several years. In 1835 appeared the first edition of his "Biographical Dictionary," a work of great labor, and one by which he is best known. The first edition had a very large sale, and the revised work, issued only a few months before his death, and on the revision of which he had bestowed years of toil, bids fair to be still more widely circulated. Though, like every other biographical dictionary, it leaves much to be desired, it is just to say that it is surpassed by no work of the kind in a single volume. After leaving his school in 1880, he devoted himself exclusively to literary pursuits, and acquired the reputation of being a very prolific author. He was the writer or compiler of nearly 50 different works, of which the greater part were text books for schools, embracing a series of reading books, treatises on astronomy, chemistry, natural philosophy, botany, geography, and history. There were also 2 or 3 volumes on rural economy, the "Family Cyclopædia," "Letters on Confirmation," a volume on prayer, sermons, addresses, &c.

BLAKE, ROBERT, English admiral, born at Bridgewater, in Somersetshire, Aug. 1599, died at Plymouth, Aug. 17, 1657. He was the eldest son of a merchant who had become rich and settled at Bridgewater. He graduated at Oxford in 1617, and then lived gravely and peacefully in his native place, taking no open part in politics, although he had adopted the principles of the Puritans, and was theoretically an ardent republican. In the parliament of 1640 he was returned member for Bridgewater, and so soon as it appeared certain that the differences between the king and the nation could not be settled except by the sword, he applied himself to military affairs, and took up arms among the first against the king in the west of England, where, until near the end of the war, the royalists were constantly superior, and were only prevented from becoming all-powerful by the stubborn obstinacy with which 2 or 3 insignificant places, scarcely deserving the name of fortified towns, held out against regular armies, and supported sieges of such duration as to produce the greatest effect on the general results of the war, by rendering it impossible for the cavaliers to concentrate their forces in the eastern and northern counties, and crush the parliamentarians where they were the strongest. Two of these places—Lyme Regis on the coast of Dorsetshire, which detained Prince Maurice before its hardly defensible walls until his army melted away; and Taunton, in his own county of Somerset, which, though small, ruinous, and half destroyed, resisted all the efforts of Granville and Goring, with 8,000 foot and 8,000 horse, until the war was ended by the defeat and capture of Lord Astley at Stowe-on-the-Wold, in 1646—owed their defence to the stern and resolute character of this natural commander, who had never served an apprenticeship in arms, nor, it is most likely, had ever seen a battalion set in array before the 43d year

of his age. In 1649, after the execution of the king, the navy having remained firm in its allegiance, Prince Rupert, who had been appointed admiral, rode the channel in defiance, and, it is believed, might at an earlier date, when the king was a prisoner in the isle of Wight, have rescued him by a well-concerted and sudden *coup-de-main*. But now the commonwealth being firmly established, its rulers began to look about them for an officer fit to take command of the squadron which they proposed to fit out, in order to retrieve the mastery of their own coasts at least, and, if possible, to recover something of the reputation which the English nation had formerly possessed at sea. Whether it was the military genius which Blake had exhibited at Lyme and Taunton, or, what is more probable, his stern republican principles, that recommended him to the men who sat at the helm of the republic, does not appear; nor is it even clear that he had ever been on board a ship of war, when he was appointed, at the mature age of 50, to command a squadron of the line, with the title of general of the sea. His orders were to pursue Rupert, with the royal squadron, whithersoever he should find him. During the preceding year the prince had lain within the harbor of Kinsale, protected by the batteries on land, but strictly blockaded by a superior force without, until Cromwell's progress by land gave him assurance that the batteries which hitherto had protected him would shortly be turned against his vessels, when he ran the gauntlet of the blockading ships, and, with the loss of three of his squadron sunk or taken in the attempt, made his way into the Tagus, where he received the protection of the king of Portugal. In the spring Blake appeared off the mouth of that river with 18 sail, and sent in a flag requesting permission to attack the pirate at his anchorage. To this request he received a point-blank refusal, when he stood in, with open ports and lighted matches, but was unable to force his way up, or was unwilling to incur the risk of losing his ships, when he well knew himself possessed of the power to enforce his demands. To this end, he at once proceeded to capture 20 Portuguese galleons, richly laden, which he sent in as prizes to the English channel harbors, threatening to continue his seizures until the king should expel the enemy. This the Portuguese speedily found it their interest to do, and Rupert set sail for the West Indies, where the Bermudas, Antigua, and Virginia still feebly held out for the crown. He lost, however, a considerable part of his squadron, by an attack of Blake, off Malaga (Jan. 1651). His brother Maurice was shipwrecked in a hurricane among the islands, and, after a while, subsisting himself and the ships under his command by privateering, or what may be more properly called piracy, he returned to France; where, finding the seas too hot to hold him, he sold both the remains of his own squadron and his prizes. In the mean time, the colonies were easily reduced by Sir George Ayscue, while the

channel islands, Jersey, Guernsey, and the Isle of Man, the latter defended by Charlotte, countess of Derby, were brought under subjection by Blake. For some years after this the government of England was not so strong at home, being engaged in intestine conflicts in Ireland and Scotland, as to undertake any foreign war. But affronts had been offered to the republic by the states-general of Holland which it was determined to resent. During the lifetime of William II. of Orange, who had married a daughter of Charles I., no redress could be had for the slaughter of Dr. Doriaus, the envoy of the commonwealth at the Hague, nor could Strickland, the resident ambassador, obtain a hearing. On the death of that prince, when it was supposed that the democratic party in the states would have obtained the preëminence, on account of the long minority of his heir, afterward William III. of England, negotiations were renewed by England, with a view either to the erection of a great consolidated republican power, by a close alliance of the 2 governments, or to the creating of a rupture which should afford a pretext for hostilities. The latter was the result, for the cavaliers and the young duke of York, in person, offered insult, and even personal violence, to the envoys, which the states-general did not punish; and the English government having prescribed a precise day, before which their proposals must be offered or withdrawn, the commissioners returned to England. The English asserted that the Hollanders were awaiting the termination of the struggle between Charles, who had been proclaimed king of Scots, and Cromwell; while the other side laid the blame on the arrogance and undue haste of the ambassadors. In the mean time, the "crowning mercy" of Worcester turned the scale of affairs, and the states-general now sent, in their turn, to London to seek accommodation. But they found the aspect of the case wholly changed. The English navigation laws had just been passed, which, in their operation, would deprive the Hollanders of the carrying trade of the world, which they had long enjoyed; and when they asked for their suspension, at least during the pendency of negotiations, not only were they peremptorily refused, but they were met by a counter demand for reparation of the cruelties committed on the English at Amboyna, some 30 years before, by a complaint that the Dutch ships were carrying to the enemy contraband supplies, and by an order to the English naval officers to compel the states' men-of-war to salute the English flag by striking their topsails on meeting in the channel. In the mean time letters of marque were granted by the English government, and above eighty prizes were brought into the English ports; whereon the states-general, refusing to grant letters of reprisal to their own merchants, fitted out a great fleet, not, as they explained to the neighboring powers, that they designed to make war, but merely to protect their commerce. A few days after

this, Admiral Young, falling in with a fleet of Dutch merchantmen, fired into them, and after a sharp action compelled them to salute the British flag. Shortly after this, again, Van Tromp, with 42 sail of Dutch men-of-war, entered the roads of Dover, as he asserted, driven in by stress of weather, with loss of anchors and cables; but, according to Blake's account, in order to insult the English fleet as it lay at anchor, and to refuse it the salute which, possibly, the Orange party, to which Van Tromp belonged, considered due to the king, not to the nation. It is a question to this day which party commenced the attack, for each admiral sent in a relation, countersigned by every captain in his fleet, differing in every particular from that of the other. Blake had in the beginning but 15 ships, but Capt. Bourne joined him with 8 more after the action had commenced. It has been alleged: 1, that it is improbable that the Dutch, who had already sought for peace by negotiation, should have commenced the affray; and 2, that it is yet more improbable that the English, with but 23 ships, should have begun hostilities against a fleet of 42. Neither answer is, however, complete, since it is more than probable that Van Tromp's own temper, which was hot and fiery, and the politics of the war party, to which he belonged, would have rendered him willing somewhat to exceed his orders, in order to bring about an affront to the Dutch flag, such as should arouse the national anger, and render war inevitable; while it was clearly not in Blake's character to take account of odds, or to decline attacking a superior force when he thought it necessary. However this may be, Van Tromp with the Dutch fleet retired to his own shores, with the loss of 2 ships of 80 guns, 1 taken and 1 sunk, the action lasting 5 hours, and being terminated only by night (May 19, 1652). The Dutch sent commissioners to explain, and, if possible, to put off the war, on any endurable terms; but the English parliament was insolent and inexorable, and replied only by a fresh demand for reparation, which not being made, energetic hostilities followed. Blake's first operation was an onslaught on the Dutch herring busses to the northward, escorted by 12 ships of war, in which he took or dispersed the whole convoy. Van Tromp pursued him with a fleet of above 100 sail; but when the 2 admirals were in sight of each other, and engaged in clearing for action, they were separated by a furious storm, which dispersed and greatly shattered the Dutch fleet, while the English admiral got off cheaply into the English harbors. Shortly after this, Ayscue, who had just returned from the reduction of the West Indies, with 40 ships of war, fell in with De Ruyter, commanding 50 ships of war and 80 merchantmen. The action lasted till it was closed by night, when the Dutch convoy and the covering squadron got off uninjured, owing, it is said, to the remissness of the inferior officers of Ayscue's squadron. He was, however, removed from his command by the parliament, who suspected him of lean-

ing toward the royal cause, though they rewarded his services in America by a pension and grant of Irish lands. De Witt was now joined by De Ruyter, Van Tromp having resigned in indignation at the temporary unpopularity into which he had fallen on the dispersion of his great armament, and a long and obstinate action was fought off the coast of Kent (Sept. 28), in which the ship of the Dutch rear-admiral was carried by boarding, 2 other capital ships were sunk and one blown up, and as before, night separated the combatants. On the following day, however, the Dutch fleet made all sail for Goree, and, getting into shoal water, where the heavy English ships could not follow them, escaped by their light draught.—After this action, Blake, who supposed that winter would bring a suspension of hostilities, divided his fleet into squadrons of observation, and retaining himself only 87 ships, was attacked (Dec. 9), near the Goodwin Sands, by Van Tromp, who had received a fresh commission, at the head of twice that number of sail, and not choosing to decline battle, fought all day with desperate courage, and at night carried off his shattered squadron, and secured it within the mouth of the Thames. The English burnt 1 large ship of the enemy and disabled 2 others; but they lost the *Garland* and the *Bonaventure*, and 4 other ships, burned and sunken. Blake himself was severely wounded, but he gained rather than lost honor; since his defence was admirable, against a force so superior, and his saving his fleet, under the circumstances, was regarded justly by his countrymen as equivalent to a victory. It is this battle, the results of which so intoxicated Van Tromp that he insulted all the coasts of England, sailing the channel with brooms at his mast-head, as if he would sweep or had already swept the narrow seas of the English fleet, and which so delighted the Hollanders that Europe was flooded by them with prints, publications, broadsides, and pamphlets, both in prose and verse, recounting their exploits and the defeat of their enemy. The English people were proportionately roused and excited. A large number of new and large ships were put in commission; 2 regiments of infantry were embarked to serve as marines; and in February, 1658, Blake was enabled to take the sea again, at the head of above 70 sail. On Feb. 18, Van Tromp, having gone down to the isle of Rhé, to convoy the homeward bound fleet, with 76 vessels of war, made his appearance in the channel with 800 merchantmen, when Blake intercepted him off Portland island, and immediately attacked, with signals for the closest action flying at all his mast-heads. From morning till night of the first day, the battle raged at close quarters. Blake was again severely wounded, and had 1 of his ships sunk; but he had taken 6 of the enemy and disabled many more, and the success of the day was his. On the following morning, at daybreak, the action was renewed, off Weymouth, the Dutch admiral interposing his ships

of war in a great semicircle, to cover the evasion of his convoy, and making signal to his merchantmen to shift for themselves. Again, during the whole day, the whole width of the channel was filled with the contending fleets, and the rocks of the Norman coast and the flat shores of Dorsetshire and Hampshire were shaken equally by the roar of the rival cannon of the 2 powerful and rich republics. The struggle was as obstinate as on the previous day; but, as before, the success leaned to the English side. On the 8d morning, off Boulogne, the terrific contest recommenced, and again lasted until night, when the Dutch, at the end of a long running fight, got into shoal water, and succeeded in getting their merchant ships and their sorely shattered vessels under cover of the dangerous shoals and sand-banks which guard their coasts, and bar the mouths of their large rivers. They lost 17 men of war, with 2,000 men killed and 1,500 prisoners, beside 50 sail of their convoys. The English had 1 ship sunk, but none taken, and lost no prisoners; their slain were little if at all inferior to those of the Hollanders. Van Tromp lost no honor, for the conduct of his retreat was masterly, and the inferiority of his ships in size and weight of metal, if it ultimately favored his escape, accounted for his inability to support the close attack of the English. The extraordinary gallantry of the Dutch defence may be estimated by the fact that the English loss in this action, of men killed and wounded, was greater than in the annihilating victory of Trafalgar, where 26 sail of the line were utterly destroyed or taken, with 20,000 prisoners, at a loss of only 1,690 English killed and wounded. The real loss of the Dutch, however, now that their fleets were shut up in their harbors, consisted in the annihilation of their fisheries, and the ruin of their trade by the English privateers, which took no less than 1,600 prizes, and, while they utterly closed the channel to their trade, infested the north sea, and made even the Baltic too hot to hold them.—At this crisis of the war, the long parliament was dissolved by Cromwell, who assumed the absolute government of the realm, and infused fresh vigor into the conduct of the war. It was now that Blake displayed his patriotism, not inferior to his conduct or courage; for, although it is known that he was a stern republican, he preserved the fleets, by his own influence with the men, firm in their duty to the government *de facto*, telling his officers that "it was not for them to mind state affairs, but to keep the enemy from fooling them." Later in the year, the contests of the fleets were renewed with equal fury, equal obstinacy, and the same result. They fought again 2 terrible actions, June 8 and 4, 1653, each of one day's duration, in which the Hollanders lost 20 ships, and were, in the end, compelled to retire into shoal water. After this the bad health of Blake compelled him to leave the sea, and he was not present at the battle of July 29, in which the Dutch lost, beside ships and men,

their great admiral Van Tromp, who was shot through the heart by a musket-ball, while animating his men, sword in hand, to the attack. His death closed the stubborn strife, for the Dutch were determined by it to make such submission as would secure a peace, which they were enabled to do on terms so favorable as showed the war in itself to have been impolitic and nearly causeless. In fact, it was waged on both sides without animosity, with little expectation of advantage, and in the main, *honoris causa*, for the empty glory of being called sovereigns of the sea.—After this, Blake was reflected by his old constituents for Bridgewater, and was received with extraordinary honor by Cromwell, who little cared what were a man's abstract opinions, and still less whether he was politically hostile to himself or not, so long as he did his duty to the government. When that great man found it necessary to make a demonstration in favor of the European Protestants, and caused it to be intimated to the pope that, under certain contingencies, his Holiness would be likely to hear the sound of English guns in the Vatican, Blake was the person whom he chose to uphold the character of the nation in the Mediterranean, as he had already done in the narrow seas. He brought the duke of Tuscany to terms; he forced the dey of Algiers to conclude an ignominious peace, and, entering the harbor of Tunis, he silenced the castles which defended it with his broadsides, and burned every ship within the defences with his long boats. Subsequently, war being declared against Spain, in 1656, on grounds which were so doubtful that many officers threw up their commissions rather than obey, he took the view that it is always a soldier's or a sailor's duty to obey his orders, not question them, and performed his most splendid exploits in capturing 2 Spanish silver fleets of galleons; the latter of which he cut out from under the castles and forts of Teneriffa, where Nelson himself met the only considerable reverse which ever befell his arms. Shortly afterward he died of scurvy, just as his victorious fleet was entering Plymouth sound. His body was buried in King Henry VII.'s chapel, in Westminster Abbey, but on the restoration his ashes were removed.

BLAKE, WILLIAM, an English artist and poet, born in London, Nov. 28, 1757, died Aug. 12, 1828. He was apprenticed to an engraver, and before he was 20, had composed some 70 pages of verse, consisting of songs, ballads, and a drama, which were published in 1787, at the instance, and partly at the expense, of John Flaxman, the sculptor. The structure of these verses was often defective; but they abounded in pleasant melody, and fine poetic thought. He studied design for a time under Flaxman and Fuseli. In 1793 he married a most estimable woman, Katherine Butcher, and commenced business as an engraver. He wrote songs, composed music, and painted at the same time; but in the excitement of his labors, he began to conceive that he was un-

der spiritual influences; and as external prosperity was wanting, he grew more and more abstracted and retired, until the visionary tendencies of his nature dominated his life. Among his friends he gave out that the works on which he was engaged were copied from great works revealed to him, and that his lessons in art were given him by celestial tongues. An original and beautiful method of engraving and tinting his plates he ascribed to the dead brother of his wife, Robert. He conversed familiarly with the spirits of Homer, Moses, Pindar, Dante, Sir William Wallace, Milton, and other illustrious dead, and sometimes he wrangled with demons. Yet he continued to pursue his art with assiduity, his wife ever sitting by his side, or assisting him at the press. His earliest work was called "The Songs of Innocence and of Experience;" it was published in 1789, with 65 etched illustrations. The next was "The Gates of Paradise," in 16 small designs, somewhat mystical in character. In 1794 there followed "Ulriken," consisting of 27 singular but powerful drawings, which disclosed the mysteries of hell. He was afterward employed to make marginal illustrations to Young's "Night Thoughts;" and in 1800 he removed to Felpham, in Sussex, to make designs for Hayley's "Life of Cowper." He wrote from his cottage there to Flaxman, addressing him as "Dear Sculptor of Eternity," and saying, in his strange wild way, "In my brain are studies and chambers filled with books and pictures of old, which I wrote and painted in ages of eternity, before my mortal life; and these works are the delight and study of archangels." After returning to London, he published "Jerusalem," a series of about 100 strange designs; 12 designs to Blair's "Grave;" 12 "Inventions" and a water-color painting of "The Canterbury Pilgrims." In 1809 he made an exhibition of this and other works. His best production was the "Inventions for the Book of Job," consisting of 21 illustrations. For the greater part of his life he "lived in a garret, on crusts of bread." He died with his pencil in hand, making a likeness of his wife, and chanting pleasant songs.

BLAKE, WILLIAM RUFUS, an American actor, born in Halifax, Nova Scotia, in 1805. His first appearance on the American stage was at the old Chatham theatre, New York, under the management of Mr. Barrere, in 1824, as Frederic, in the "Poor Gentleman," and in Elliston's favorite character in the "Three Singles." His success was great; and he now stands at the head of his profession. His Jesse Rural, in "Old Heads and Young Hearts," is pathetic and touching to a great degree, bringing domestic comedy to the very frontier of tragic feeling itself. Mr. Blake, who is well educated, is a fluent and effective speaker. He has been stage manager of the Tremont theatre, Boston, joint manager of the Walnut street theatre, Philadelphia, and stage manager of the Broadway theatre, New York.

BLAKELY, JONATHAN, a master and commander in the U. S. navy, born in Ireland, Oct.

1781, and while very young brought to the United States by his parents, who established themselves in North Carolina. He was educated in the university of that state, and entered the navy as midshipman in 1800. In 1818 he commanded, as lieutenant, the brig *Enterprise*, of 14 guns, in which vessel he cruised very actively upon the eastern coast, and rendered important services in the protection of the coasting trade from English privateers. In August of that year he was promoted to the rank of master-commandant (this title is now altered by law to commander), and appointed to the new sloop *Wasp*, in which vessel he sailed from Portsmouth, N. H., on a cruise, May 1, 1814. June 28, in lat. 48° 86' N., long. 11° 16' W., he fell in with, and captured, after an engagement of 28 minutes, H. B. M. sloop *Reindeer*, Capt. Manners, of 18 24lb. carronades, and 1 shifting gun, and a complement of 118 souls. This action was a very severe one, and, as was usual in the naval combats in the war of 1812, there was a manifest superiority of gunnery on the American side. The upper works of the *Reindeer* were completely cut to pieces, and she had 25 killed and 42 wounded, Capt. Manners among the former, while the *Wasp* was hulled by round shot but 6 times, and had 5 killed and 22 wounded. The *Reindeer* made 3 attempts to board, which were repulsed with great steadiness. In the last attempt, her gallant commander was slain. She was finally boarded in her turn, and carried. The danger of recapture being great, Capt. Blakely destroyed his prize, put into L'Orient with his prisoners, with the exception of a portion of the wounded, who were received by a neutral vessel soon after the action. The *Wasp* sailed from L'Orient Aug. 27, on another cruise, and immediately made several captures, one a vessel laden with guns and military stores, which was, with great address, cut out of a convoy in charge of a line-of-battle ship. On the evening of Sept. 1, while running free, the wind blowing fresh, 4 sail were discovered, 2 on each bow, and the *Wasp* hauled up for the most weatherly of them. At 20 minutes past 9 she was brought to action, which continued 52 minutes, when the enemy surrendered. As the *Wasp* was lowering a boat to take possession, 8 other vessels hove in sight astern, and it became necessary to abandon the prize. One of these vessels pursued, and fired a broadside into the *Wasp*, and then joined the ship which had surrendered, being called to her by signals of distress. It was afterward ascertained that this vessel was the *Avon*, Capt. Arbuthnot, of 18 32lb. carronades, and 120 men, and that her loss was from 80 to 50 in killed and wounded, though this was not known with certainty. The combat was very close. The *Wasp* had but 2 men killed, and 1 wounded, the latter by a wad. The *Avon* sunk soon after the engagement, and the lives of her officers and men were saved with difficulty. The vessel which pursued and fired upon the *Wasp* was the *Castilian*; and

one of the other vessels in sight was also a cruiser. But little more was ever known of the Wasp. She made several captures after her engagement with the Avon, which were destroyed; and on Sept. 21, she captured the brig Atalanta, which being valuable, a prize crew was put on board her, and she was ordered to Savannah, in charge of Midshipman, now Commodore, Geisinger. She arrived safely, and brought the last direct intelligence ever received from the Wasp. Several years afterward, it was shown that on Oct. 9, 1814, nearly 50 days after the capture of the Atalanta, she was spoken by a Swedish brig, and received from her 3 American naval officers, Messrs. McKnight and Lyman, who had been captured in the Essex, exchanged, and were then on their passage to England, as the only means of reaching the United States. Vague rumors as to her fate have prevailed from time to time. One, that an English frigate put into Cadiz, in a very crippled state, and reported that she had engaged and sunk an American corvette. Another, that she was lost upon the coast of Africa, and that all on board her were captured by the Arabs. Another, that about the time her arrival upon the American coast was looked for, 3 English frigates chased an American sloop of war off the southern coast, and that in a violent squall which struck the 3 ships, the sloop suddenly disappeared. None of these rumors were ever traced to an authentic source. The Wasp, like most sloops of war of that day, was a vessel of but little over 500 tons, heavily armed and sparred, and very deep waisted. Such ships are proverbially unsafe, and she probably foundered in a gale. Capt. Blakely was an officer of great merit. He was brave, skilful, and modest, and had he lived, would doubtless have risen to the highest professional distinction. He left a widow, and an infant daughter, who was educated by the state of North Carolina.

BLAKELY, a pleasant, healthy village, port of entry, and the capital of Baldwin co., Alabama, situated on the Tensaw river, just above its entrance into Mobile bay. It is well supplied with water, and contains the county buildings, some handsome dwellings, and numerous stores. Its harbor, which admits vessels of 11 ft. draught, is deeper and more easily accessible than that of Mobile, 12 m. S. W., and it was thought that this would render it a great commercial rival of the latter city—an expectation which is yet unfulfilled.

BLANO, LE, a town of France, in the department of Indre, on the river Creuse. It is a very ancient place, and was often visited by the Roman legions. Pop. in 1856, 5,781.

BLANO, MONT. See MONT BLANO.

BLANC, JEAN JOSEPH LOUIS, a political and historical writer of France, born at Madrid, where his father held the office of inspector-general of finance, under Joseph Bonaparte, Oct. 28, 1818. His mother was a Corsican, and the sister of the celebrated Pozzo di Borgo. At 7 years of age he was sent to school at Rodez, where he

pursued his studies for 10 years, exhibiting great capacity for learning, and unusual ability. He had been originally designed for diplomatic service, but as his father lost his fortune in the revolution of 1830, he was compelled to teach mathematics to earn his support. In 1832 he became tutor to a private family residing at Arras, and while there wrote several articles for a local journal, which attracted attention. Removing to Paris in 1834, he was chosen an editor of the *Bon Sens*, a periodical of considerable influence. He left it in 1838, in consequence of a dispute with the proprietor on an important question of political economy. The next year he established *La Revue du Progrès*, to promote the combination of the democratic associations, and to further the cause of political reform. A treatise on the "Organization of Labor" came from his pen in 1840, and by the spirit and eloquence with which it was written, gave him a position as one of the ablest writers of the socialistic school in Paris. He maintained in it that industry, in its present unregulated and competitive state, impoverishes and debases the working classes, and that it ought to be organized on a principle of community, by which each should contribute according to his capabilities, and receive according to his wants. A more important work, issued not long afterward, was a "History of Ten Years," in which the political incidents of the period from 1830 to 1840 were described with remarkable animation, sagacity, and effect. The work inflicted a dreadful blow upon the administration of Louis Philippe, and is supposed to have exerted a great influence in bringing about the revolution of 1848, by which that monarch was dethroned. When that outbreak came, he was one of the leading spirits of it, was a member of the provisional government from February to May, and as such procured the adoption of a decree abolishing capital punishment for political offences. He also contended for the creation of a ministry of progress, and not being able to carry that measure, withdrew from the government, but, at the request of his colleagues, took back his resignation, and became the president of a commission to consider the labor question, which held its sittings at the Luxembourg, but which accomplished nothing. The foundation of the so-called national workshops, out of which finally grew the insurrection of June, 1848, has been ascribed to him, but in fact he opposed the step; and he has since repeatedly declared, and without any authoritative contradiction, that they were founded rather to injure than illustrate his views of industrial organization. After the insurrection of June, he was accused of conspiracy against the government on the occasion of the previous rising of May 15, in which he had not been included, and on the advice of his friends went into voluntary exile in England. Before that, however, he had commenced a "History of the French Revolution," which he has since continued. It is a work of great research and vigor

of execution, giving the socialistic view of the events of the great insurrection, and describing characters with a rare insight into motives, and a comprehensive philosophy of cause and effect. The first volume, being an introduction to the rest, is the most striking *résumé* of the causes of the revolution, both public and private, that has perhaps ever been written. In person, Louis Blanc is so diminutive as to have the look of a mere boy, but his bearing is grave, dignified, and impressive.

BLANCHARD, FRANÇOIS, aéronaut, born at Andelys, department of Eure, France, in 1788, died in Paris, March 7, 1809. He was distinguished from his youth by his mechanical ingenuity. The invention of the balloon by the brothers Montgolfier, in 1783, greatly interested him, and he constructed a balloon with wings and a rudder, in which he ascended in March, 1784. Jan. 7, 1785, he crossed the British channel from Dover to Calais, for which Louis XVI. rewarded him with a gift of 12,000 francs, and a life-pension of 1,200 francs. He invented a parachute, to break the fall in case of accident, and first used it in London, in 1785. He visited various parts of Europe, displaying his aeronautic skill, and sojourned for a short time in New York. Returning to France, in 1798, he ascended from Rouen with 16 persons in a large balloon, and descended at a place 15 miles distant. In 1808, while making his 66th ascent, at the Hague, he had an apoplectic stroke, from the effects of which he died in the succeeding year.—Madame Blanchard, his wife, who had partaken of his dangerous successes, continued to make aerial voyages; but in June, 1819, having ascended from Tivoli, in Paris, her balloon took fire, at a considerable height, owing to some fireworks which she carried with her, and burnt, while the hapless aéronaut was dashed to pieces on the ground.

BLANCHARD, LAMAN, an English author, born at Great Yarmouth, May 15, 1808, died at London, Feb. 15, 1845. At the age of 5 he was removed to London, where he was educated at St. Olave's school, Southwark. His first occupation was as reader in a printing-office, which afforded him time and opportunity for cultivating his literary tastes. In 1827 he was appointed secretary of the zoological society, in which office he continued until 1831, when he became acting editor (under Bulwer) of the "New Monthly Magazine." He had previously published a small volume of poetry, called the "Lyric Offering." Mr. Blanchard's connection with the magazine so far established his reputation as a ready writer, with aptitude and tact, that he successively obtained editorial employment on the "True Sun," "Courier," "Constitutional," "Court Journal," and "Examiner," beside contributing largely to periodicals and annuals. He touched on a great variety of subjects, in prose and verse, and generally with marked ability. For some time his wife had been insane, and his own health gave way under the contemplation of her affliction. On her

death his mind lost its balance, and he committed suicide. It was alleged that pecuniary pressure was a proximate cause of his own suffering, but Mr. Blanchard, who was not extravagant, always had a sufficient income from his pen, and at his death was not only sub-editor of the "Examiner," but acting editor of "Ainsworth's Magazine," and well paid for both. He was popular with literary men, from his amiable disposition and unaffected manners. His "Essays and Sketches," collected from various periodicals, were published for the benefit of his orphans, in 8 volumes, prefaced by a very interesting biography of the author, by Sir Edward Bulwer Lytton.

BLANCHARD, THOMAS, an American mechanic and inventor, born in Sutton, Worcester co., Mass., June 24, 1788. From a strong bias for mechanical employments, he joined his brother, who was engaged in the manufacture of tacks by hand, a very slow and tedious process, and at the age of 18 commenced his invention of a tack machine. It was six years before he could bring it to the desired perfection. Finally, so effective was the machine, that by placing in the hopper the iron to be worked, and applying the motive power, 500 tacks were made per minute, with better finished heads and points than had ever been made by hand. For this machine Blanchard secured the patent, and sold the right to a company for \$5,000. About this time various attempts were made in the United States armories at Springfield and Harper's Ferry, to turn musket barrels with a uniform external finish. Blanchard undertook "the construction of a lathe to turn the whole of the barrel, from end to end, by the combination of one single self-directing operation." About 8 inches of the barrel at the breech was partly cylindrical and partly with flat sides; these were all out by the same machine, ingeniously changing to a vibrating motion as it approached the breech. A knowledge of this invention came to the superintendent of the Springfield armory, who contracted with Mr. Blanchard for one of his machines. While it was in operation, one of the workmen remarked that his own work of grinding the barrels was done away with. Another, employed on the wooden stocks, which were then all made by hand, said that Blanchard could not spoil his job, as he could not make a machine to turn a gunstock. Blanchard answered that he was not sure, but he would think about it, and as he was driving home through the town of Brimfield, the idea of his lathe for turning irregular forms suddenly struck him. In his emotion he shouted, "I have got it, I have got it!" The principle of this machine is, that forms are turned by a pattern the exact shape of the object to be produced, which in every part of it is successively brought in contact with a small friction wheel; this wheel precisely regulates the motion of chisels arranged upon a cutting wheel acting upon the rough block, so that as the friction wheel successively traverses

every portion of the rotating pattern, the cutting wheel pares off the superabundant wood from end to end of the block, leaving a precise resemblance of the model. This remarkable machine, with modifications and improvements, is in use in the national armories as well as in England, and in various forms is applied to many operations in making musket stocks, such as cutting in the cavity for the lock, barrel, ramrod, butt plates, and mountings, comprising, together with the turning of the stock and barrel, no less than 18 different machines. Beside gunstocks, it is also applied to a great variety of objects, such as busts, shoe lasts, handles, spokes, &c. Mr. Blanchard was also interested at an early day in the construction of railroads and locomotives, and in boats so contrived as to ascend the rapids of the Connecticut, and rivers in the western states. He has taken out no less than 24 patents for different inventions. From few of them, however, has he realized any considerable sums. At present he resides in Boston, engaged in the bending of heavy timbers by some new and as yet unrevealed process.

BLANCHE OF BOURBON, queen of Castile, born in France about 1388, died in Spain in 1361. When 15 she was betrothed to Don Pedro IV. of Castile, afterward called the Cruel. He was already controlled by his love for Maria Padilla, and reluctantly consented to the performance of a purely political marriage. The ceremony took place June 8, 1353, at Valladolid, when the king did not even take the trouble of concealing his indifference, not to say his hatred, for the young and lovely bride. Forty-eight hours later, he fled from her to his mistress. Yielding to the entreaties of Maria, who wished to act with great circumspection, he paid a visit to the forsaken wife; but a stay of 2 days in the same palace was all that his impatience could endure. He then left forever the unfortunate queen, who was sent a prisoner to Tordesillas, on the Douro. Meanwhile her beauty, sweetness of temper, and the harsh treatment of her husband, awoke the sympathy of the people, which was evinced on the occasion of her removal to the Alcazar of Toledo. On her way thither she was allowed to enter the cathedral to say her prayers, and the inhabitants, moved by pity and fearing her life was in danger, rose against the king's officers, and declared they would protect her at the peril of their lives. The city therefore made preparations for defence, and called in the king's bastard brothers, who were then in arms against Don Pedro. The rebels, in the hope that the queen's popularity would serve their cause, proclaimed themselves her champions, but do not seem to have cared much for her safety. The inhabitants of Toledo were more faithful; unfortunately, they were unable to resist the troops of Don Pedro, who took the city by storm. His wife, now again a prisoner, he refused to see, but ordered her to the castle of Sigüenza. From this place she was removed to Xerez de la Frontera. She died suddenly, whether

from poison, as was then generally believed, or in consequence of her sorrows and long imprisonment, it is difficult to decide. The news of her death sent a thrill of pity and indignation through France; and a few years later, when the "great companies" under Du Guesclin, marched into Spain to help Henry Trastamare against Don Pedro, many a knight engaged in the war merely for the purpose of avenging the unhappy Blanche.

BLANCHE OF CASTILE, queen of France, born in 1187, died Dec. 1, 1252. She was the daughter of Alfonso IX., king of Castile, by Eleonora of England, sister of Richard the Lion-hearted and John Lackland. By the treaty of peace concluded in 1206, between John and Philip Augustus, it was agreed that Blanche should marry Louis, heir-apparent to the crown of France; the marriage ceremony was consequently performed in the beginning of the following year. Her beauty and sweet temper secured at once the affections of her husband, while her good sense, energy, and prudence won the regard of her father-in-law, who, shrewd monarch as he was, frequently took advice from the young princess. She consequently mingled in political affairs, giving repeated evidence of both ability and decision. In 1216, when her husband was called to England by the lords confederated against John, she insisted upon his accepting their offer; she spared no exertion to help him in this bold undertaking, and sent him money and reinforcements. Undoubtedly, if the English crown could have been won by good management and chivalrous conduct, the young couple would have been successful; but John being dead, the lords returned to their allegiance to his son. Louis saw himself deserted by his former adherents, and a fleet, despatched by Blanche, having been defeated off Dover, Aug. 24, 1217, no alternative was left to him but to return to France. His wife consoled him in his defeat, and, 18 months later, encouraged him in a crusade against the Albigenes. On the death of Philip Augustus, and the accession of Louis VIII. to the throne, she was more than ever the inspiring genius of her husband. She accompanied him in his new crusade against the Albigenes, and received from him, on his death-bed, at Montpensier, the guardianship of his eldest son, afterward Louis IX. The attention given by Blanche to politics had never interfered with the motherly care she bestowed on her children, and the new king, then a pious and good-natured boy, evinced in after life all the virtues of a hero and a saint. Through her title of guardian, she at once assumed the regency, and ruled with such ability that she overcame all the difficulties springing from the ambitious schemes of insubordinate vassals. A formidable league had been formed in the north of France, claiming the regency for young Philip Hurepel, a son of Philip Augustus by Agnes de Meranie. Among the number was Thibault IV., count of Champagne, said to be in love with the queen; she

so adroitly used her influence over the mind, and perhaps the heart of her alleged lover, that she made him the staunchest supporter of her son. She was thus enabled, after a struggle of nearly 4 years, to defeat the confederates. Meanwhile she had secured to the crown the rich inheritance of the counts of Toulouse, by a treaty signed at Paris in 1229; she then forced to submission the unruly duke of Brittany, and helped her friend, the count of Champagne, in taking possession of the kingdom of Navarre. In 1234 she married her beloved son, then 19 years old, to Marguerite of Provence, who was but 12, thus paving the way for the ultimate reunion of that beautiful country with France. When, in 1236, she resigned her power into the hands of Louis IX., the kingdom was in a flourishing condition, and had received many important territorial accessions. The young king, who entertained for his mother the tenderest love and deepest respect, could not but be sensible of her great services, and retained her near him as his best and constant adviser. But with all his condescension to her wisdom, he had a will of his own, as was evidenced by his engaging, against all her remonstrances and entreaties, in a crusade to the Holy Land. She wept bitterly on their parting, as if she felt that they were not to meet again. She now resumed the duties of regent, and displayed her wonted ability among the new difficulties she had to encounter. The defeat and captivity of her son in Egypt was a bitter grief to her; while the necessity of paying his ransom, and sending him money for his journey to Palestine, obliged her, however reluctant, to lay heavy taxes upon the people. She had beside to suppress, by somewhat cruel measures, the revolt of the poor *Pastoureaux*, which was also a severe trial to her feelings. Notwithstanding her piety, she kept free from the sway of the clergy, and did not hesitate to restrain the encroachments of that powerful body. Her death caused universal mourning.

BLAND, JOHN, a martyr in the reign of queen Mary, burned at Canterbury, July 12, 1555, with another clergyman and 2 laymen, boldly admitting the charges made against him of denying the corporal presence, the propriety of celebrating the sacrament in an unknown tongue, and in one kind only to laymen.

BLAND, COL. THEODORE, a Virginia patriot, was born in Prince George county, Va., in 1742, died in New York, June 1, 1790. Through his grandmother, Jane Rolfe, he was fourth in descent from Pocahontas. At an early age he was sent to England, where, at Wakefield, the scene of Goldsmith's "Vicar," and afterward at Edinburgh, he pursued his academical and medical studies with success. Together with Drs. Lee, Field, Blair, Gilmer, and Bankhead, his fellow-students, he drew up a petition to the Virginia house of burgesses, to enact a law forbidding any person to practise medicine in the colony without a proper license. Soon afterward, in 1764 or '65, Dr. Bland re-

turned to Virginia, and, marrying Miss Dangerfield, of the "Northern Neck," commenced the practice of his profession, which he assiduously pursued to the opening of the revolution. Abandoning medicine, he at once enlisted in the contest, in all the struggles of which he bore an active and prominent part. He was one of a score of gentlemen who removed from Lord Dunmore's palace the arms and ammunition which that nobleman had abstracted from the public arsenal; and soon afterward he published a series of bitterly indignant letters against the governor, under the signature of "Cassius," in which his excellency was charged with "giving currency to lies," holding "lewd and nightly orgies with negroes in his palace," and oppressing the colony generally. Col. Bland was made captain of the first troop of Virginia cavalry, but when 6 companies were enrolled, became lieutenant-colonel, with which rank he joined the main army in 1777. With the exception of a single term in the senate of Virginia, he remained in military service to the end of the war, enjoying the high esteem and confidence of Washington, who frequently employed him in responsible affairs. Among other trusts confided to him, was the command of the prisoners taken at Saratoga, when they were marched to Charlottesville, Va. Upon the termination of the revolutionary contest, he was elected a member of the general congress, which then sat at Philadelphia. Here his mansion was the resort of Washington, Lafayette, M. de Noailles, M. de Dumas, and many of the most distinguished men of the epoch. He continued in congress until 1783, when he returned to Virginia. He was elected a member of the convention of 1788 to ratify the federal constitution, against which he voted, but was chosen as the first representative to congress under that instrument. He died at New York, where that body was then sitting, at the age of 48. Dr. Bland was greatly prized for his social accomplishments, which set off an elegant and imposing person. He was tall, his countenance noble, his manners dignified and full of well-bred repose. In his public and private character, all his actions were characterized by rigid integrity, and unfaltering devotion to principle and duty.

BLANDRATA, GIOSEIO, one of the founders of Unitarianism in Poland and Transylvania, born in the marquisate of Saluzzo, in Piedmont, in the first part of the 16th century, died about 1590. A physician by profession, he united great talent with great personal advantages, which endeared him to a numerous circle of friends at Pavia, where he resided for some time. Having embraced the doctrines of the reformation, he retired to Geneva, but having manifested anti-Trinitarian opinions, he soon found the religious atmosphere of Switzerland equally uncongenial, and first repaired to Germany and subsequently to Poland. Notwithstanding the admonition of Calvin, he was received with distinction, and gained such credit among the Protestants of Poland, that he was

elected one of the superintendents of the Helvetic churches of Little Poland. This gave him great facilities for spreading his opinions, and the reformed churches of Poland seemed to be in the way of being wholly pervaded by the fast spreading anti-Trinitarianism. More cautious than Stancor, and other religious reformers, he feigned to subscribe to the Calvinist creed, and made an apology for his belief at the synod of Xionz. In vain were all the endeavors of Calvin to expose the insincerity of his professions. The Italian, instead of being considered as a heretic, found many followers among the most eminent personages, and among others, Prince Radziwil, who appointed him as his plenipotentiary to the synod of Pinczow in 1561. Having accepted the place of physician to John Sigismund, prince of Transylvania, in 1568, Gregorius Pauli, of Brzeziny, became his successor in Poland, and gave to the anti-Trinitarian doctrines a more complete development, while Blandrata now aimed at propagating his views in Transylvania. He succeeded in causing the prince and the court to embrace his doctrines, and at a diet held in 1571 at Maros-Vasarhely, Unitarianism was legally recognized as one of the religions of the land. This took place after a public disputation which he had held, in conjunction with Davidis, a celebrated Unitarian divine, against the Lutheran ministers at Weissenburg, and which lasted 10 days. After the death of John Sigismund, he returned to Poland, and was physician to Stephan and Christopher Bathori, the rank of privy councillor being conferred upon him after Stephan's accession to the throne of Poland. The Bathoris, although not peculiarly favorable to Unitarianism, were unable to prevent the growth of the new doctrines. The denomination increased in power and influence all over the country, and especially numerous were the congregations in the Transylvanian towns of Weissenburg and Klausenburg. The rights and privileges which the Transylvanian Unitarians enjoy at the present day, are thus all to be traced to the seed sown by Blandrata and his fellow-laborers. Blandrata, however, seems to have been swayed by worldly considerations in the latter part of his life, and to the great consternation of his friend Faustus Socinus, and of the other adherents of his church, he endeavored to ingratiate himself with King Stephan, and to augment his fortunes by abandoning his former religious grounds. He finally met with a violent death from the hand of his own nephew, who was supposed to have been instigated by mercenary motives, as he was afraid lest the religious differences between him and his uncle might alienate from him the latter's large property, which he considered himself entitled to inherit. Henke published in 1795, *G. Blandrata confessio Anti-trinitaria ejusque confutatio, auctore Matthia Flacio*.

BLANE, SIR GILBERT, an English physician, born in Ayrshire, Scotland, Aug. 29, 1749,

died June 26, 1834. Through the recommendation of Dr. Wm. Hunter, of London, he became private physician, first to Lord Holderness, and then to Admiral Lord Rodney, who, for his gallant conduct during an engagement, made him physician to the fleet. In 1788 he received a pension from the crown, and published "Observations on the Diseases of Seamen." In the West Indies he obtained the friendship of Prince William Henry (afterward William IV.), then a midshipman under Lord Rodney, and this greatly advanced him in his professional career, obtaining him large private practice, and the presidency of the naval medical board. He wrote a variety of tracts and pamphlets on medical subjects, and on the best mode of preserving public health. In 1812 he was made a baronet.

BLANGINI, GIUSEPPE MARCO MARIA FELICE, a musical composer, was born in Turin in 1781, and died in Paris, Dec. 1841. At 12 he was organist of the cathedral in that city, and at 14 led a mass with a full orchestra. He went to Paris in 1799, and was for several years a successful composer of opera there. His fame, however, rests chiefly on his smaller pieces, which were received with much favor, especially in Germany, where he officiated for some time as chapelmaster at the courts of the elector of the Bavarian Palatinate, and of the king of Westphalia.

BLANK VERSE, verse without rhyme or the consonance of final syllables. All the Greek and Latin verse is of this species. Rhyme was the native growth of the heroic and primitive literature of the northern barbarians. During the dark ages not only did rhyme preserve its monopoly over the vernacular languages of Europe, but even intruded itself into the Latin. Gonsalvo Perez, a Spaniard, the secretary of state to the emperor Charles V., and afterward to Philip II., brought blank verse into European notice by translating Homer's "Odyssey" into the Spanish with that metre. Felice Figliucci, in his Italian commentary on the ethics of Aristotle, published 1551, declaims against the Gothic barbarity of rhyme, says that it is unworthy of the favor of a son of Italy, and puts his precepts into practice by translating the quotations from Euripides and Homer which are found in Aristotle into Italian verse without rhyme. In 1547 and 1548, Trissino published his *Italia Liberata di Goti*, in blank verse. Yet from the nature of the language, and inasmuch as Dante and the great Italian poets of the middle ages had all used rhyme, Italy has not been favorable to the growth of a blank verse literature. Trissino is generally recognized as the introducer of blank verse into the modern Italian, and it is said composed the tragedy of *Sofonisba* as early as 1524. In the French language Jodelle and De Baif, who lived in the second quarter of the 16th century, composed in blank verse. Nicholas Rapin, who lived at the end of the 16th century, was a fanatical worshipper of

blank verse. He declared that it was his wish to extirpate rhyme. De la Motte le Vayer in the age of Louis XIV. wrote in it, but generally speaking the French ear abhors blank verse. The first English blank verse was the "Fourth Boke of Virgill intreating of the Loue betwene Æneas and Dido; translated into English, and drawn into straunge metre" (Lond. 1557), by Lord Surrey. This book must have been composed more than 10 years previously, as Lord Surrey was executed in 1547. Nicholas Grimalde followed Surrey with great success. The first theatrical piece in blank verse was Lord Sackville's tragedy of "Gorboduc" (1561). When Shakespeare began to write his dramas, the popular ear had grown quite familiar with the use of this metre. Blank verse did not flourish much off the stage in English literature until Milton's "Paradise Lost" (1667) vindicated its capabilities. In the preface to the second edition of the poem Milton says: "This neglect of rhyme is so little to be taken for a defect, though it may seem so perhaps to vulgar readers, that it is rather to be esteemed an example set, the first in English, of ancient liberty recovered to heroic poem from the troublesome and modern bondage of rhyming. . . . Some both Italian and Spanish poets of prime note have rejected rhyme both in longer and shorter works, as have also long since our best English tragedies." Longfellow's "Evangeline" is perhaps the most favorable example of the hexameter, a species of blank verse to which the English language does not take kindly. The German, of all the languages of modern Europe, admits the greatest variety of blank verse measures. The 10 syllable heroic pervades the dramas of Schiller and Goethe, as

Die schönen Tage von Aranjuez;

but in Germany not one, but every species of ancient Greek and Roman metre has taken root. The phrase blank verse is of English origin. The Italians call it *verso sciolti*, that is, loosened or emancipated verse. The oldest example of the use of the phrase is in Shakespeare: "The lady shall say her mind freely, or the blank verse shall halt for it."

BLANKENBURG, a province of Brunswick, in Germany; area 178 sq. m.; pop. in 1857, 22,479. The southern part of it, bordering on the Hartz mountains, contains valuable iron mines and marble quarries. Louis XVIII., on his flight from Dillingen, resorted to the capital of Blankenburg, a town of 8,500 inhabitants, which bears the same name, and resided there from Aug. 24, 1796, to Feb. 10, 1798, under the name of Comte de Lille.

BLANQUI, JÉROME ADOLPHE, a distinguished political economist of France, born at Nice, Nov. 20, 1798, died in Paris, Jan. 28, 1854. His father, Jean Dominique, formerly a deputy to the national convention, one of the 72 imprisoned in 1793, for protesting against a measure of the Jacobins, afterward a member of the council of five hundred, and a

sub-prefect under Napoleon, devoted much care and time to his early education. He was originally destined to the study of medicine, but his love for general letters caused him to turn his attention to other pursuits. For a while he was a sub-professor in a boarding-school, when he removed to Paris, and made the acquaintance of Jean Baptiste Say, then a renowned teacher of political economy. Through him, the studies of Blanqui were turned in the direction of that subject, and he made it the pursuit of his life. In 1826, a *Résumé* of the history of commerce and industry was the first fruits of his labors. It was speedily followed by a *Précis élémentaire d'économie politique*, and several minor publications, including accounts of voyages to England and to Spain. In 1880 he was chosen a professor in the special school of commerce, where his course in the history of commerce and industrial civilization attracted unusual attention. When Say retired from his professorship in the *conservatoire des arts et métiers*, Blanqui succeeded to his place. In 1837-'42 he issued his most important work, *Histoire de l'économie politique en Europe depuis les anciens jusqu'à nos jours*, which was a succinct but clear and intelligent review of the movements of industry from the earliest time, and of the teachings of the great writers in regard to the laws of trade. The peculiarities of the work were, that the author did not begin his history with Adam Smith or the old French physiocrats, as if the ancients were wholly ignorant of the subject, but with the earliest nations and the earliest writers, while he was also sufficiently comprehensive to recognize the scientific position of the socialist school of speculators. Attaching himself to the class of thinkers which adopts the system of free trade, he was yet disposed to do justice to thinkers of another class. In 1846-'48, Blanqui sat as a member of the chamber of deputies from Bordeaux. At the industrial congress which assembled in Brussels, during the year 1847, his discourses were remarked for their mingled vivacity and learning.—Louis AUGUSTE, a socialistic and revolutionary agitator, brother of the preceding, born at Nice in 1805. Early initiated in the secret societies of that country, he strongly imbibed the communistic and republican doctrines, which he has made it the business of his life to assert. His first public appearance was after the elections of 1827 in Paris, when the royal troops fired upon the populace in order to quell a transient political disturbance, and Blanqui was among the wounded. In 1830, while yet a student of law, he took up arms on the popular side, against the rule of Charles X., and for his bravery and spirit afterward received the decoration of July. Under the government of Louis Philippe, he prosecuted a fervent contest, by means of pamphlets and articles in the liberal papers, against the *bourgeoisie*, or trading classes. A member of the club called *la société des amis du peuple*, he became one of the most active propagators

of the doctrines which led to the revolution of 1848. A discourse pronounced before this society in 1885 directed the attention of the government to him, when he was arrested, tried, and sentenced to 1 year's imprisonment, and a fine of 200 francs. A few months later, being suspected of complicity with Fieschi, who discharged the infernal machine at the king, he was again arrested, sent to prison for 2 years, and fined 8,000 francs. He was amnestied before the expiration of his term, although a return to Paris was interdicted. As soon as he was released, he began the organization of an immense affiliated association, which, under the names of *société des saisons* and *les montagnards*, renewed the anti-monarchical propagandism. The members of these were supposed to amount to 1,000,000 in number. With Barbès and others, he attempted a revolution at Paris, in May, 1839. It failed, and Blanqui was seized and condemned to death; but again his punishment was commuted to perpetual imprisonment. The revolution of Feb. 1848, freed him from his fetters, and he became a leader of the people. The insurrection of May 15 was organized by him, and, at the head of a large body of delegates, he marched to the hall of the national assembly, to inaugurate, if possible, a more effective government; but he was overpowered by the troops under Changarnier, placed once more under arrest, and, upon trial, remanded to prison for 10 years.

BLARNEY, a small village in the south of Ireland, 4 miles distant from the city of Cork. Its surrounding scenery is beautiful, but it is chiefly visited on account of its castle, celebrated in song and legend. This antique pile formerly belonged to the Mac Carthy family, until forfeited, in 1689, by Lord Clancarty, when it was purchased by an ancestor of Mr. Jeffreys, the present owner. It stands on the north side of a precipitous ridge of limestone rock, rising from a deep valley, and part of its base is washed by a small and beautifully clear river called the Aw-Martin. Near it are the famous groves of Blarney—literally a thick shrubbery of large laurel trees. Of the original fortress there remains only a large, square, massive tower—a sort of keep. The top of this is surrounded with a parapet, breast high, and on the summit is the famous stone, which is said to confer on the person kissing it the peculiar property of saying anything, by way of coaxing, compliment, or praise, most agreeable to the hearer. From the virtue it thus communicates, the well-known word blarney is derived. Various are the traditions respecting the origin of this term. The most plausible (related by Crofton Croker) declares that in 1602, when the Spaniards were exciting the Irish chieftains to harass the English authorities, Cormac McDermod Carty held, among other dependencies, the castle of Blarney, and had concluded an armistice with the lord president, on condition of surrendering this fort to an English garrison.

Day after day did his lordship look for the fulfilment of this compact, while the Irish chief continually put him off with soft promises and delusive delays, until, at last, the lord president became the laughing-stock of Queen Elizabeth's ministers, and Blarney talk proverbial. In the "Prout Papers" is an amusing attempt to show that the Blarney stone (described as "the palladium of Ireland") was originally brought over by the Phœnician colony who are said to have peopled that island, and that, indeed, the inhabitants of Tyre and Carthage, who long were its custodians, made great use of the privilege, as the proverbs, *Punica fides*, *Tyriosque bilingues*, clearly testify; that a body of Carthaginian adventurers stole away the stone to Minorca (where Port Mahon was settled by the clan of the O'Mahonys), and afterward, driven into Cork harbor, deposited the treasure in the present spot, and the shadiest groves of its vicinity; and that the famous song, "The Groves of Blarney," instead of being an original composition, was translated from the Greek! The actual Blarney stone is not the one commonly saluted as such, but is said to form part of the wall several feet below its representative, and only to be touched by the lips by the person being held over the parapet by the heels—an operation so dangerous and unpleasant as rarely to be resorted to. It is believed, in Ireland, that a shot from one of Cromwell's cannon loosened the stone; but it is doubtful whether Cromwell ever visited Blarney, and it was Lord Broghill who became master of the castle in 1646. Mr. Richard Alfred Milliken, a poetical lawyer of Cork, being struck with the amusing extravagance of some doggerel rhymes composed by an itinerant cobbler, in favor of Castle Hyde, near Fermoy—in which he spoke of

The trout and the salmon
A-playing backgammon,
All by the banks of sweet Castle Hyde—

wrote "The Groves of Blarney," as a burlesque, in the same metre, about the year 1798 or 1799. In the following year it was heard, at Cork, by the late Mr. Mathews, the comedian, who sang it frequently at private parties. It was afterward sung on the stage, and by none more effectively than the late Tyrone Power. Peculiar suavity of speech is the presumed virtue derived from kissing the Blarney stone. What is called impudence is said to be bestowed (when not naturally and nationally inherited) by a dip in the river Shannon, a ceremony probably traceable to the dipping of Achilles in the Styx. Among the many pilgrimages to Blarney, none was more memorable than that of Sir Walter Scott (accompanied by his daughter, Miss Edgeworth, and Mr. Lockhart), in 1825. They had a right mirthful picnic among the groves, says Lockhart, and "Sir Walter scrambled up to the top of the castle, and kissed, with due faith and devotion, the famous Blarney stone, one salute of which is said to emancipate the pilgrim from all future visitations of *mauvaise honte*."

BLASPHEMY (Gr. *βλασφηεια*), impious speaking or writing concerning sacred things, which includes not merely profane use of the name of God, but any scoffing or scurrilous language in respect to the commonly received doctrines of religion. In the Mosaic laws, blasphemy was any thing irreverent of Jehovah. The name was not to be spoken except in religious services, nor was the name of any heathen god. The case referred to in Lev. xxiv. 11, seems to have been an improper use of the prohibited name, though in a different sense from what is intended in the 2d commandment. The latter refers to a trifling or inconsiderate use of the name of God—the other more particularly has reference to such language as expressed disbelief in God, or his attributes; and this is the proper distinction between blasphemy and profane swearing. The punishment by the Jewish law was death. In the time of our Saviour, it appears to have been considered blasphemy to claim divine power (Matt. ix. 8, John x. 83). Paul called himself a blasphemer before his conversion (1 Tim. i. 13). The same word which in the Greek is used for blasphemy, is sometimes translated "railing" (1 Tim. vi. 4). In Roman Catholic countries, not only irreverent language respecting God or Christ, but avowal of disbelief in certain articles of faith or popular tenets, has been held to be blasphemy, and punished by the civil power as a crime. By the common law of England, blasphemy is indictable as a criminal offence, and it is defined to be a denial of the being or providence of God, contumelious language respecting Christ, or profane scoffing at the holy Scriptures. This was so held on the ground that the Christian religion is a part of the laws of England. A publication containing scurrilous or contemptuous language respecting our Saviour has been held to be a libel at common law; and as a general principle it has been adjudged to be unlawful to write against Christianity in general, or against its doctrines, if there be apparent a design to undermine it altogether, but that it is allowable to write upon controverted points in a decorous manner, even though some articles of faith held by the church of England should be affected. In the United States the Christian religion has been received as a part of the common law, and blasphemy is consequently a criminal offence. In some of the New England states, and perhaps in some others, there have been statutes regulating the punishment, but practically they are inoperative, and the cases have been rare of any proceedings under them. In the state of New York it has been held that whatever tends to impair public respect for the Christian religion, is subversive of civil society, and that indecorous language, whether spoken or written, offensive to the general religious tone of feeling of the community, is an indictable offence, while at the same time it is conceded that there is liberty of controverting any matter of doctrine, so that it be done in a proper manner.

BLASTING, the process of breaking rocks by the explosive force of gunpowder. The application of this force has very properly been suggested as a new mechanical power. When it was first employed for this purpose is not known, but it is certain that it was long after gunpowder was used as a destructive agent in war. Burat, in his *Géologie appliquée*, states that the use of gunpowder for mining purposes is traced back as far as the year 1632. Rocks were previously broken up by the hammer, and by the introduction of wedges, which were sometimes of wood, and were then made to swell and burst the rock by absorbing water that was placed around them. Water was also used alone, being introduced into holes and crevices and exposed to a freezing temperature, when the expansion of the ice acted like powerful wedges. Fire, too, was employed to heat the surface, and this being suddenly chilled by the application of cold water, the rock was rendered brittle, so as to be easily reduced. But these slow and expensive methods were soon mostly abandoned for the blasting process, and the expenses of mining were estimated to have been reduced, in consequence, more than one-half. The enormous force evolved by exploding powder is owing to its sudden conversion into gases, amounting in bulk to more than 450 times that of the powder, supposing them to be cooled down to the freezing temperature; but in the highly heated condition attending their production, their volume is estimated to be from 4,000 to 6,000 times that of the powder. According to the calculations of Hutton, the elastic gas expands with a velocity of 10,000 feet per second, and with a pressure equal to that of 1,000 atmospheres, which would be, upon every square inch of surface exposed to the force, not less than 6½ tons.—Powder is applied to blasting rocks in different methods, according to the object in view. It is introduced into small cylindrical holes, bored for the purpose, and, being securely confined, is there exploded. These holes, in mines, are not often more than 4 or 5 feet deep, generally not more than 3 feet, and of 1 inch to 1½ inch in diameter; in quarries they are sometimes 20 feet deep and 4 inches in diameter. This is in such situations that advantage may be taken of a vertical bank, and the powder, nearly filling the hole from the bottom up, can throw off the wall along its whole height. Another method is that of the "sand-blast." This is employed when crevices are found extending into bodies of rock, or when cracks are opened by a previous blast, which failed to break up the rock sufficiently for its removal. Powder is poured loosely into such openings in large quantity, and it is then covered with dry sand, a communication being secured to it by the introduction of pieces of safety fuse before the powder is covered. For breaking down the huge sheets and blocks of native copper in the copper mines of Lake Superior, no other known method but shaking them by the sand-blast could be effectual.

Standing upon their edges in the veins, and entirely enclosed in solid rock, they are first uncovered along one of their sides by excavating a horizontal drift or gallery. Small cavities are then made behind the mass, along its upper edge, by repeated blasts in the tangled rock and copper. As these cavities are enlarged, more powder is introduced, till, if the mass be very large, several hundred pounds are spread in the crevice behind it, and fired at once, before it is finally thrown over into the open space previously excavated. At the Minnesota mine 26 kegs, of 25 pounds each, were thus fired at once at the time of a visit of the writer, in the summer of 1856. The effect was hardly perceived on the surface, except by a low, rumbling sound, and a rush of air up the shafts.—In the ordinary mode of blasting in small holes, steel drills are employed for cutting out the cavity. At the cutting end they are brought, rather bluntly, to a sharp edge, called the bit, the length of which is made greater than the diameter of the rest of the drill. This is in order that it may cut a hole large enough for the octagonal bar to work in freely, and it is made longest at the extreme edge to prevent the bit from jamming in the hole. A convenient point upon the rock is selected, where the shape offers the opportunity for the greatest fracture, and the hole is commenced with the use of a drill of a foot or thereabout in length, which is struck by one person, and held and turned partly round at each blow by another. For very small holes the same person holds the drill in one hand and strikes with a hammer held in the other. The fine particles of stone broken by the drill are scooped out with an iron spoon. As the hole gains in depth water is introduced to prevent the overheating of the steel edge, and longer drills, with bits of less diameter, are used in place of the shorter, and sometimes 2 men, or even 3, are employed to strike in turn the head of the drill. The rate at which it is driven into the rock varies with the hardness of this, and with the temper and sharpness of the drills. Some silicious rocks of close texture, like the sharp grits of the lower stratified rocks, and some trap rocks, also, are so hard that they cannot be penetrated (even when the drill is struck by 2 men) at a faster rate than an inch an hour, and this when the drills are of the best character of steel, and are kept well tempered and sharpened. It is not unusual, in boring a hole from 2½ to 3 feet deep, in such rocks, to dull as many as 40 drills, so that they require fresh sharpening by the blacksmith. Ordinarily, however, the work is prosecuted with much less labor and greater speed. When the hole is completed, it is next thoroughly dried by a swab. It is then ¼ or ⅓ filled with powder. The end of a piece of safety fuse is pushed into the powder, and the tamping, which consists of broken pieces of brick, or of any soft kind of stone without grit, is then introduced and driven down with a copper bar, called the tamping-bar. As this is struck by a

hammer, it is important that it should be made of a soft material, that will not strike fire against the sharp particles of the rock. Tamping a hole is the dangerous part of the process of blasting, as the bar itself, if of iron, may strike fire, or the fragments of the tamping may possibly do the same, when rubbed against each other or against the sides of the hole, and this communicating with the powder may produce a premature explosion. Sand thrown in loosely is sometimes used to fill the hole, and by many it is thought equally advantageous as the hard-driven tamping. Both coverings occasionally shoot out when the blast is fired, but perhaps not one more frequently than the other. Instead of these, a wooden plug is sometimes used for covering the powder, but this method is also attended with danger. In driving a closely fitting plug by heavy blows, fire is almost certain to be produced by the sudden compression of the confined air. A serious accident occurred from this cause at Copper Harbor, Lake Superior, July 4, 1856. When the hole is filled, the fuse is cut off from the coil, leaving a sufficient length to give the person who fires it time to retire. The report soon follows the application of the match, and one judges by its sound of the execution of the blast. If loud and sharp, it indicates that but little effect has been produced, while a dull, compressed sound, tells that the force of the powder has been expended in shaking up and cracking large bodies of rock. As the holes bored in mines are pointed in every direction, it sometimes happens that one in the roof of the mine cannot be made to hold the powder, unless this be introduced in a cartridge, and in wet places cartridges are always required that are water-tight. These are sometimes made of tin, though stiff brown paper, well coated with tar or pitch, will generally answer as well. A superior quality of safety fuse, prepared also water-tight, is used with them. In ordinary blasting other expedients are frequently used instead of the safety fuse, which is quite a recent invention. A stiff, slender, tapering rod, called the priming wire, is set into the powder, resting against the side of the hole, until this is filled. It is then drawn out by putting the tamping-bar through the eye at the upper end of the wire, and striking it gently upward. The small hole left by it is then filled with powder, which may be fired by a slow match.—As the great labor in blasting consists in drilling the holes, which after all contain but a small quantity of powder, various plans have been devised for enlarging the cavity at the bottom, in order to make it contain a larger quantity of the exploding material. In calcareous rocks this has been effected by the use of acids, which dissolve the stone. For other rocks, a very ingenious process has been invented and patented by Mr. A. Stickney, of Concord, New Hampshire, which, though a very effectual method, has not yet come into general use. After the hole (which should be not less than 8 inches in diameter) is bored to the

depth of 5 or 6 feet, fragments of the best hard-wood charcoal are thrown into the bottom and ignited. A blast is then blown in from a portable bellows, through a wrought-iron tube, to which is added, at its lower extremity, a tube of platinum not less than a foot in length and half an inch in diameter. The lower extremity of this is closed, but its sides are perforated with numerous small holes. As the blast circulates through these, the charcoal burns vividly, producing intense heat, and melting away the side of the cavity. The tubes must be frequently withdrawn to hook out the fragments of cinder which accumulate. As the operation goes on, and the size of the chamber increases, the fire is kept up by continually dropping more charcoal into the hole by the side of the tube, the hole being left open for the escape of the gases. The walls of the chamber are then more rapidly acted upon, so that in the course of a few hours the cavity is sufficiently large to hold 20 or 30 pounds of powder. In granitic rocks the effect of this operation is very remarkable; the ingredients melt down into a liquid slag, and if a bucket of cold water is dashed in upon the highly heated surface, this is scaled off in large flakes by the sudden chill, and by the mechanical action of the high steam, which is instantly generated. In hard silicious rocks, as the firm sandstones of the Shawangunk range, the rock crumbles down to sand, and this is blown out of the hole as the process goes on, covering the surface around. In calcareous rocks, the stone is burned to quicklime, and a large cavity is rapidly produced. The heat generated in this operation is so great, that wrought-iron pipes have been melted down, by coming into too close contact with the charcoal. The enlarged dimensions of the hole at the bottom are particularly favorable for the explosive force of the powder to be exerted to the best advantage. Huge masses of rock are lifted up, and cracks of great extent are opened to a depth not reached by the ordinary method of blasting. These cracks afford convenient opportunities for the use of the sand-blast, and thus very large quantities of rock are broken up with comparatively small expense of drilling.—Firing a number of charges simultaneously by the galvanic battery is sometimes adopted with great advantage, where large bodies of rock are to be moved. The effect produced by the same quantity of powder is much greater than if the charges were separately exploded. The same method of firing is also conveniently applied to blasting under water. In the "Encyclopædia Britannica" it is stated that this was first put in practice by General Pasley, in 1839, in removing the wreck of the Royal George at Spithead, and again the same year in submarine rock-blasting by Mr. Alan Stevenson. But in vol. xxi. of the "American Journal of Science," for 1831, is a letter of Dr. Hare, describing the operations of Mr. Moses Shaw, who had already applied the electrical machine

to this purpose, and then by advice of Dr. Hare was making use of the galvanic battery; and in vol. xxvi. of the same journal (1834) the apparatus is fully described, with drawings which show that the arrangement was essentially the same with that now in use. In the year 1843 three charges of 18,000 lbs. of powder were fired simultaneously by this means at Dover, by Mr. William Onbitt. A chalk cliff 400 feet high was thrown down with little report, and the beach was covered with 400,000 cubic yards of chalk-rock. It is estimated that the saving to the South-Eastern railway company in this operation over the ordinary process was not less than £7,000. Submarine blasting of rocks has been successfully prosecuted with the use of the diving-bell for sinking the holes, and charging them with cartridges contained in a tin tube, as recommended by Dr. Hare. From this a smaller tube is extended to the surface, which, when filled with powder, is fired. The effect of powder fired under the pressure of the water appears to be greater than in explosions of similar quantities upon the land. The fragments are removed but a short distance, and little disturbance is caused upon the surface of the water. It has been found that ledges of rock in this situation may be reduced in height without boring holes, simply by exploding large charges of powder upon the surface of the rock, by the use of the galvanic battery. In this way the surfaces of several dangerous ledges of rock in New York harbor have been taken off by M. Maillefert, and the depth of water increased over them. A battery has been introduced in Scotland of very compact arrangement, designed for igniting charges at a distance. It is constructed of zinc and cast-iron plates, alternating with each other, and about a quarter of an inch apart. The first and second iron plates are connected together as a double terminal plate, from which proceeds the wire forming the positive pole. The first zinc plate is united by a strip of metal with the third iron plate, the second zinc with the fourth iron, and so on to the end of the series, which may consist of 20 plates of zinc and 21 of iron. The last zinc plate will be disconnected with the rest, and from this proceeds the wire forming the negative pole. The plates are separated by slips of wood $\frac{1}{2}$ of an inch thick, and are kept in place by 2 pieces of board at the ends, connected by cross strips at the sides, and with one at the bottom, to prevent the plates from falling out. As 2 plates intervene between every pair in metallic connection, there is no occasion for partitions in the trough. The space required for a battery of 20 pairs, or of 41 single plates, will not exceed 20 inches in length. Such a battery is readily constructed, and is found to be efficient at a distance of 500 feet. By adding a second of the same kind, the charges may be fired at still greater distances. The conducting wires of copper should be insulated by a covering of silk or cotton thread, and several inches near

their extremities be twisted together. The 2 ends should diverge from the twist as far as the diameter of the hole for the charge will admit, and a fine steel wire, like those used for the hair springs of watches, or a fine platinum wire, should connect the two poles. This, and as many such connections as there are blasts to be fired, are arranged in their proper places along the conducting wires, and each is introduced with the powder into the hole, care being taken in the charging and tamping not to disturb the connections.—By the Austrian engineers electricity is preferred to voltaism for firing charges, the quality of the conductor not being of so much importance in the use of the former. With the apparatus they employ, explosions have been produced at a distance of $1\frac{1}{2}$ German leagues, and 50 mines exploded simultaneously, on a line of 100 fathoms. Under water explosions were made at a distance of 400 fathoms, the conductor extending to the length of 500 fathoms. The process has been in use under water in the Danube, near Grein, and the marble quarries near Neustadt, for some years, with perfect success. The explosive substance, a mixture of sulphur, antimony, and chlorate of potash, is easily made, and is placed in the form of a cartridge at any part of the conducting line. See "Mechanics' Magazine," No. 1688. The subject of blasting under water is fully treated in Appletons' "Dictionary of Mechanics."—The quality of the powder preferred for blasting is not the quick kind that is used for rifles, and operates most successfully in the projection of missiles, but it is the most sluggish in its action, affording time for the rocks to open and be shaken before the effect is lost in a sudden quick explosion. Blasting powder should consist of 65 parts of saltpetre, 15 of charcoal, and 20 of sulphur; while the best gunpowder is made of 75 parts of saltpetre, $12\frac{1}{2}$ of charcoal, and $12\frac{1}{2}$ of sulphur. The grains of the best blasting powder are extremely coarse; they may be as large as barleycorns. They should be perfectly dry, hard, of even size, shining, free of dust, so as not to soil a white handkerchief. As the initial effect of powder is to a considerable extent proportional to the surface over which it is distributed, it has been found advantageous to insert in the centre of cartridges a core of wood or iron. Many have supposed they accomplished the same object by mixing with the powder a proportion of dry sawdust. In some parts of Europe this has been extensively practised. At the mines of Tarnowitz, in Silesia, it has been customary to use $\frac{1}{4}$ sawdust. In other mines in Germany and Sweden it is considered that $\frac{1}{4}$ to $\frac{1}{2}$ of the powder employed may be saved by the use of this material. About $\frac{1}{4}$ of the mixture is its most usual proportion. This practice is condemned as unphilosophical by the writer of the article STONE, in Tomlinson's Cyclopædia. In Sweden small hollow cones of wood are sometimes placed in the bottom of the holes to preserve an empty space

below the powder. For some reason, perhaps the greater elasticity caused by the air retained, it is believed that the effect of the powder is considerably increased. Gun-cotton has been employed to some extent in blasting; and for use in mines it possesses the important advantage over powder of not giving off smoke; a much less quantity also is required to exert the same force. It is, however, more expensive than powder, more dangerous to prepare, and operates too quickly to produce the best effect in blasting. For these reasons its use has diminished, and it is not likely it will ever be largely employed for blasting purposes.—Beside the application of blasting to breaking rocks, the process is often adopted with great advantage for shattering stumps which it is desirable to remove, and also for splitting large logs of wood. A hole is bored into them with an auger, and instead of tamping in the usual mode, a wooden plug is inserted to cover the powder. The danger of explosion by compressed air should always be remembered in this process.—Some French inventors have taken out a patent in England for splitting rocks by the generation of heat, without causing an explosion. They used a substance composed of 100 parts of sulphur by weight, 100 of saltpetre, 50 of sawdust, 50 of horse manure, and 10 of common salt. The saltpetre and common salt are dissolved in hot water, to which 4 parts of molasses are added, and the whole ingredients stirred, until they are thoroughly incorporated together in one mass, which is then dried by a gentle heat in a room or by exposure to the sun, and is fit for use. It is tamped in the holes bored for blasting rocks in the same manner as gunpowder, and is ignited by a fusee. It does not cause an explosion upward like gunpowder, but generates a great heat, which splits the rock.

BLAYE, a fortified seaport of France, pop. in 1856, 4,302, department of Gironde, 20 miles N. N. W. of Bordeaux. The river Gironde, about $2\frac{1}{2}$ miles wide here, is defended by forts Pâté and Médoc. All inward bound vessels are obliged to anchor at Blaye and exhibit their papers, and outward bound vessels usually take in stores here.

BLAYNEY, BENJAMIN, an English Hebraist, died Sept. 20, 1801, the author of valuable dissertations on biblical subjects, and corrections in the authorized version of the Bible. He was canon of Christ church and regius professor of Hebrew at Oxford, and finally rector of Polshot, Wilts.

BLAZONRY is the science of describing a coat of armorial bearings in appropriate language, and in accordance with the rules of heraldry; or of constructing, drawing, and coloring such a coat from a verbal or written description; or, lastly, of recognizing and reading coats armorial, so as to know and declare the families, intermarriages, and facts of relationship which they indicate. The term blazonry is also sometimes used to signify the sub-

stance and pomp of the things emblazoned, as one sees it quaintly written in the old chronicles that a host was "glorious with the blazonry of banners," meaning merely with numbers of emblazoned banners. In blazoning, the tinctures of shields are divided into colors, metals, and furs. The metals are, *or*, gold, and *argent*, silver; the latter simply represented by white. The colors are, *gules*, red; *azure*, blue; *sable*, black; *vert*, green; *purpure*, purple; and *terné*, sanguine. The furs are, *ermine*, black cross-shaped spots on white; *ermine*, white cross-shaped spots on black; *ermineois*, black cross-shaped spots on gold; and *vair*, which is small alternate shields or escutcheons of azure and argent, covering the whole field or ground of the shield, or coat armorial. It is false blazonry, when an object is to be represented on a field or ground, to describe both of metal, both of color, or both of fur. Thus there cannot be correctly blazoned a cross argent on a field *or*, because both the thing charged and the field on which it is charged are metals; nor a cross sable on a field *gules*, because both are colors; nor a cross *ermineois* on a field *vair*, because both are furs. A cross *or* on a field *azure* is correct, because metal can be charged on color; so is a cross *gules* on a field *argent*, because color can be charged on metal; and so again is a cross either of *argent*, *or*, or any color, on *ermine*, *ermine*, *ermineois*, or *vair*, because metal and color can both or either be charged on fur.

BLEACHING (Fr. *blanchiment*, whitening), the process of removing the coloring matters from fabrics of cotton, linen, wool, silk, &c., or from the raw materials, and also from straw, wax, and other substances, and leaving them perfectly white. Steeping cloths in lyes extracted from the ashes of plants, appears to have been practised by the ancient Egyptians for this purpose. In modern times the Dutch have almost monopolized the business, at least till within about 100 years. Previous to this time the brown linens manufactured in Scotland were regularly sent to Holland to be bleached. A whole summer was required for the operation; but if the cloths were sent in the fall of the year, they were not returned for 12 months. It was this practice which caused the name of *Hollands* to be given to these linens. The Scotch introduced the business of bleaching for themselves about the year 1749; but it was long believed that the peculiar properties of the water about the bleaching grounds of Haarlem gave to this neighborhood advantages which no other region could possess. Bleaching, though wholly a chemical process, and raised to its present greatly improved state entirely by the application of chemical skill and chemical discoveries, is still not well understood in the rationale of the changes effected. By long steeping in alkaline lyes it is supposed that the coloring matters are freed from all the greasy and glutinous substances introduced in the weaving, and thus are rendered more free to be acted upon by the

oxygen of the air or water, and ready to form with this compounds which are soluble and easily removed by boiling. The dew falling upon the cloth appears to have a peculiar influence upon the removal of the color; and the sun's rays increase the effect by some chemical action belonging to light, which is imperfectly understood. The art of bleaching was conducted by alternate steeping in alkaline liquors called buckings, followed by thorough washing and boiling and long-continued exposure upon grass, with frequent sprinklings of water, which process was called *crofting*; and this was followed by the souring process, or keeping the articles soaked for weeks in sour milk, to be afterward washed and *crofted* several times. By substituting dilute sulphuric acid for sour milk to dissolve out the alkaline matters, as suggested by Dr. Hope, the time required for this part of the process was reduced to a few hours in place of a few months. But the other operations still involved long time, particularly the *crofting*; and frequent losses moreover were incurred by the exposure of the goods in the large establishments upon the great extent of grass lands they required. Of cotton goods $\frac{1}{10}$ to $\frac{1}{15}$ of their weight is lost by bleaching; but linens often lose as much as $\frac{1}{3}$, by which their strength also is considerably impaired: the finer linens lose only from 12 to 25 per cent. In Silesia and Bohemia, where the chlorine process is not adopted, the linens are exposed to a fermenting process, then washed, and steeped in alkaline liquors, with alternate exposures upon grass, which processes are repeated a great number of times for 60 to 70 days; but to render them properly white, they are afterward passed through a bath acidulated with sulphuric acid, then treated again with the potash lye several times and alternately exposed on the grass, and finally thoroughly cleansed by washing in a revolving cylinder called a dash-wheel. This machine is also employed in the English and Scotch processes for washing the goods without subjecting them to unnecessary wear. The frequent repetition of the different processes is rendered necessary by the complete diffusion of the coloring matters through the flax fibres, and their close union with them; each operation decomposing and removing in succession small portions only. The discovery of chlorine gas in 1774 led to the great improvement in bleaching of applying this gas to the removal of the colors. This use of it was originally suggested by the French chemist Berthollet, in the year 1785, and explained the next year by him to Watt of Glasgow, who was then in Paris. By Watt the process was soon introduced into Britain, the gas being used in solution in water. Its preparation was found to be highly injurious to the health of the workmen, and the fibre of the cloth was weakened by the action of the chlorine. Berthollet improved the process by diluting the aqueous solution with water, and also by saturating with potash a portion of the acid. This was the first step toward the preparation of the chloride of lime, which

was originally prepared after long-continued experimenting by Tennant of Glasgow, in the year 1798. Its first employment was in the form of a saturated liquid solution; but in the year 1799 he patented the use of the dry chloride of lime or bleaching powder, the preparation and properties of which will be described under its own head. Bleaching by chlorine, as now practised, varies somewhat as applied to the different fabrics; but a succession of different processes is still adopted, as in the old methods. Thus in bleaching cotton, there are the preparatory operations of singeing off the loose fibres by passing the cloth over heated cylinders; then soaking some hours in water, followed by the dash-wheel; then boiling in lime-water, which acts upon the grease, and prepares it for easy removal by the next operation of boiling in water. This is followed by the souring process, which dissolves out the adhering lime, and a succeeding washing prepares the cloth for bleaching. This consists in steeping the cloth in a dilute solution of the chloride of lime, which is called the chemicking process. The liquor consists, for every pound of cloth, of about half a pound of chloride of lime and 3 gallons of water. Souring and washing succeed this, and these processes are repeated, it may be, several times; altogether they amount, including calendering, to about 25 in number. Though still very complicated, the time of the operation is greatly reduced from that of the old method. In 2 days is now accomplished what formerly required a whole summer, and the cost of the process amounts to only about 20 cents per piece of cotton cloth of 24 yards. Bleaching linens with chlorine, though somewhat more expeditious than the process already referred to in Bohemia and Silesia, is still a tedious operation, and probably is susceptible of great improvements. It involves from 8 to 20 different processes of steeping, boiling, washing, souring, &c., with exposure upon the grass for from 80 to 60 days. Without this exposure a longer time is required for the bleaching action of the solution of chloride of lime. Rags are bleached for the paper-makers, after being thoroughly washed in the engine and reduced to what is called half-stuff, by soaking them for 6 to 12 hours in a solution of chloride of lime; from 2 to 4 pounds of the dry chloride being used for every cwt. of rags. When the rags are strongly dyed it is often necessary to add some sulphuric acid (half the weight of the bleaching powder), and cause the mixture, with the rags placed in it, to revolve for some time in a tight cylindrical vessel, till the chlorine evolved has removed the colors. This process is followed by thorough washing. Wool requires a thorough preparation called scouring, to free it from the soapy and waxy matters exhaled from the skin of the sheep. Weak ammoniacal lye is found efficient for this purpose, and this is obtained by boiling putrefied urine with 4 to 8 times its quantity of soft water. The wool is steeped and well washed in a warm bath of this liquor, until all the

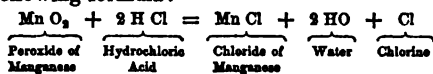
impurities are converted into soapy matters and removed by rinsing in clean water. Caustic soda is sometimes used instead of ammoniacal liquors. The bleaching is effected by means of sulphurous acid gas instead of chlorine. This gas has the property, not, however, peculiar to it, of uniting with the coloring substances and forming with them colorless compounds, which remain in the fibre. It is usually employed by filling a close chamber, in which the woollen materials are suspended, with the vapor of burning sulphur. This, uniting with the oxygen of the air in the chamber, forms sulphurous acid gas, which, in the course of 12 to 24 hours, destroys the colors in the wool. The materials, instead of being exposed to the gas, are sometimes steeped in water acidulated with it. This usually requires twice as much time, but the operation of the acid is more uniform, and, if well managed, it can probably be made more economical in time and cost of material than the use of the gas. Wool, after the "sulphuring" process, has a harshness about it, which is removed by soaking and washing it in a warm and weak bath of soft soap. Silks are scoured by soaking them in a solution of soap kept at the temperature of about 90° F. From 30 to 40 pounds of very fine soap are used for every 100 pounds of silk; but the proportions vary according to the uses that are to be made of the articles. This removes the gelatinous and waxy matters which give the stiffness to raw silk. After steeping, the silks are well washed, put into linen bags, and boiled for an hour and a half in a weaker solution of soap. Different shades of white are given to the silk, without further bleaching, by the use of very weak dyes of litmus or indigo. A pure white is obtained by the sulphuring process. Steam has been applied in England, under a patent, to bleaching silks. Wheat-straw is grown in Tuscany without reference to the grain. The plants are sown broadcast, and the straw is cut when the grain is in the milk. It is thin and short, but of fine texture. On being cut, it is dried for a few days in the sun, then stacked in bundles, and dried in the mow for a month. After this, it is partially bleached by exposure, upon the meadows, to the dews and sun; and the process is completed by steaming and sulphuring. In England, a boiling solution of caustic soda is employed to dissolve the hard natural varnish upon the outside of the straw; after which the usual bleaching process, with sulphurous acid or chlorine, is applied. This hard coating, it is said, may also be removed with economy, by several steepings in dilute alkaline solutions, alternating with others of chloride of lime, and the vapor of sulphurous acid. Chlorine is the most common agent employed for bleaching, a variety of other substances beside those already named; as, for example, wax, and articles of paper, as maps, prints, books, &c. But frequently, colors imparted to cloth by strong dyes, require for their removal different chemical reagents, as chromic acid, or the combination of this with potassa.

Protochloride of tin is also employed for the same purpose. These are called discharges, and are principally made use of in the calico print works. The whitening of candles, paraffina, sugar, &c., will be described in treating of those articles. A process has been introduced in France of bleaching wax, which is also applicable to oils, by melting it in hot steam, and subjecting it to its action in passing through a kind of worm. It is also washed with hot water alternately with the steaming.—Hydrate of alumina, prepared by decomposing alum by carbonate of soda, has recently been substituted for animal charcoal, for decoloring liquids. Experiments made by M. Ch. Mérie, chemist of the metallurgical works at Grenot, show that 15 grammes of alumina may replace 250 grammes of animal charcoal, in decoloring a quart of water colored by 10 grammes of litmus; or for sirup colored by molasses, 7 grammes of alumina were equivalent to 125 of animal charcoal. The alumina is, moreover, restored with less expense than the charcoal.—We pass to the consideration of the process for bleaching cotton, which has long been extensively known as the "American bleaching." Before the year 1836, Dr. Samuel L. Dana, acting as consulting chemist to the Merrimack manufacturing company of Lowell, Mass., had completed an investigation on the adhering and coloring matters of the cotton fibres, which led him to devise and carry into practice the application of chemical agents in such order as to insure uniform results in bleaching. The resinous-waxy envelopes of the fibres, as well as the accidental starch, albuminous, and oily bodies present in the manufactured goods, are by this method resolved into soluble compounds and removed; and when in 1837 the process as practised became known to the scientific bleachers and printers of Mülhausen, it drew forth their expressions of admiration for its completeness. This method is founded on the 2 following principles: 1. The conversion of the fatty and waxy matters into soaps; and for security and economy, it is preferable that these soaps should have alkalino-earthly bases; caustic lime becomes, therefore, a most effectual agent. 2. The decomposition of the basic soaps formed, so as to convert them into soluble soaps, which is effected by the action of an alkaline carbonate. These are the cardinal principles on which this almost perfect process is founded, but there are practical points of interest. After the principles were published, M. Auguste Scheurer, of Mülhausen, suggested the passing of the goods from the lime into diluted acid. This step, by no means essential, increases the certainty of an easy decomposition of the lime soap, as the acid seizing the base enters into combination with it, leaving the fatty acid free to combine with the base of the alkaline carbonate, and form soluble soap. In describing the process as almost perfect, a point was in view, which called for this qualifying phrase. Dr. Dana found that after the new process had been

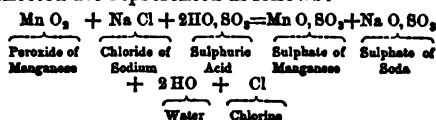
applied, and modified applications had been made, there still remained adhering to the fibre a substance which has many of the characters of wax. This substance he has studied at great length, separating it from bleached cotton by means of boiling alcohol, which deposits it on cooling. Its few affinities do not allow of the application of any special agent for removing it wholly; while the solution of rosin in alkali, combining with it, dissolves a portion. This body, unlike wax in its relation to coloring matter, becomes tinted in ordinary madder printing, at the points where it is desirable that white grounds only should appear, and no modification of bleaching methods has yet met or overcome this difficulty. It was deemed proper, before leaving this subject, to present this point—of waxy matter remaining—prominently, as it is the one from which future improvements will depart; and it was due to the distinguished discoverer of a process, creditable to the science of our common country, that no misconception in relation to the great practical points reached should exist. The steps of this process divide as usual under those necessary to the solution of extraneous bodies, and those by which bleaching of the fibre is effected, and as presented here are the experience of extensive manufacturing, at the Merrimack manufacturing company's works in Lowell, Mass. *Bleaching process:* 1. Steep the cloth in water at temp. about 90° F. for 24 hours. 2. Pass through a bath of milky caustic lime, containing 60 lbs. for 2,500 lbs. of cloth. 3. Boil the cloth as it passes from the 2d operation 6 hours, counting from the moment ebullition actually occurs. 4. Wash through the washing machine. 5. Pass through a bath of sulphuric acid, diluted till it marks 2° B. 6. Wash in machine. 7. Boil 6 hours in a solution of carbonate of soda (soda ash), containing 100 lbs. for 2,500 lbs. of cloth, and in which 40 lbs. of common rosin have been previously dissolved. 8. Wash in machine. 9. Pass in washing machine through a clear solution of chloride of lime, marking 1° B. 10. Expose the cloth, as it is folded from the machine into pits with open sides, to the action of the air and carbonic acid, still saturated with the solution of chloride of lime. 11. Pass in washing machine through sulphuric acid and water diluted to 2° B. 12 and 13. Wash twice in machine. All these operations are conducted in the ordinary vessels called kiers, heated by steam, and in the usual "log-rolling" washing machines, with their special adaptations.

BLEACHING POWDER. By the action of chlorine gas upon hydrate of lime, a compound is produced, which is known by the common name of chloride of lime. By the calico-printers, and others who make use of it for its bleaching properties, it is called bleaching powders. It is also known as hypochlorite of lime, chlorinated lime, &c. The compound was first prepared by Mr. Tennant of Glasgow, in experimenting upon the best applications of chlorine to bleach-

ing purposes. He first made it in the form of the saturated liquid solution; and the year succeeding (in 1799) he took out a patent for impregnating dry quicklime with chlorine. By the suggestion of one of his partners, slaked lime, or the hydrate, was substituted for the quicklime, having the property of absorbing large quantities of the gas, which the quicklime has not. The firm of Messrs. Tennant & Co., of Glasgow, have continued to this time the largest manufacturers of this valuable bleaching material. In preparing it, a pure quality of lime is required, free from iron, clay, and magnesia, the presence of which would seriously affect the bleaching process. It should also be well and freshly burned, and freed from all carbonic acid. Enough water is then to be added to it to cause it to fall into a fine white powder, which is the hydrate of lime. Chlorine is prepared by several different processes; but 2 only are in common use in the large establishments. One of these consists in decomposing hydrochloric acid by heating it in contact with coarsely pulverized black oxide of manganese. This substance, which is the ore called pyrolusite, and also the similar ore, psilomelane, furnishes a large amount of oxygen gas, which in the mutual decomposition unites with the hydrogen of the hydrochloric acid to form water, setting free the chlorine, an atom of which takes the place of the oxygen, forming chloride of manganese, and another atom escapes. These changes are represented by the following formula:

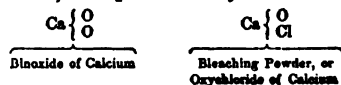


the first part of the equation being the materials employed, and the latter the products obtained. The other process consists in mixing the manganese ore with common salt, and adding sulphuric acid. The changes which are then effected are represented as follows:



It is important that the manganese ore should be of the purest quality, in order to obtain from it the largest quantity of oxygen gas. Pyrolusite when pure gives up, at a white heat, 88.1 per cent. of its weight of oxygen, and passes into the red oxide. Chlorine gas is thus prepared in large alembics or stills, which are made of cast-iron, where exposed to strong heat, and in part of strong sheet lead; or sometimes of stones closely fitted and cemented to each other. The lower portion is sometimes made double for introducing hot steam for heating the mixture in the inner vessel. The materials introduced are in the following proportions, rated as if pure, but varying with their impurities: binoxide of manganese, 100 parts; common salt, 150 parts; and sulphuric acid, of

specific gravity 1.6, about 185 parts. The temperature is kept at about 180° F., and the materials are kept in agitation by a stirrer, which is made to revolve in the lower part of the vessel. As the gas is evolved, it passes by a lead pipe to the purifier, and into the top of the chamber in which the hydrate of lime is deposited in trays, which are placed upon shelves. Heat is generated by the chemical combination; but it should not be allowed to exceed 62° F., the supply of chlorine being checked to keep the temperature down. For 2 days the process goes on, when it is stopped, that the workmen may enter with half a set of trays of fresh hydrate of lime to replace an equal quantity, which has been exposed 4 days to the action of the gas, and to stir over that which has been in 2 days. Half a charge is thus taken out every 2 days. When well made, it should be a uniform white powder, without lumps, smelling of chlorine, dissolving with little residue in 20 parts of water with alkaline reaction, and attracting moisture very slowly from the air. When prepared in a liquid state, the gas is passed into lime-water, till this is saturated with it. The solution, for the quantity of lime it contains, is stronger than the dry powder, but it is not so permanent in character, the chlorine sooner escaping from it. It cannot, therefore, be kept long.—A process of obtaining chlorine from salt by means of nitrate of soda and sulphuric acid has been patented in England, and is carried on by the Messrs. Tennant, of Glasgow, upon a large scale. They decompose about 8 tons of nitrate of soda weekly, from which they obtain about 12 tons of good bleaching powder. This process is described by Dr. Muspratt in his recent work on chemistry. The expense for labor and fuel is represented to be no greater than by the sulphate method. The heavy cost of the nitrate of soda is counterbalanced by the nitrous acid produced, which supplies the place of nitrate of soda in the manufacture of sulphuric acid.—The exact chemical constitution of chloride of lime has never been definitely settled. By some chemists it is regarded as a hypochlorite of lime combined with an equivalent of chloride of calcium. Dr. Ure considers it a mixture in no definite proportion of chlorine and hydrate of lime. As formerly prepared, the mixture, when chlorine ceased to be absorbed, consisted of 1 equivalent of chlorine and 2 of hydrate of lime; but by the improved process of preparation, the best samples, according to Dr. Thompson, now consist of single equivalents of chlorine and lime, and are almost entirely soluble in water. Dr. Muspratt and some others regard it as a compound of the type of binoxide of calcium, in which 1 equivalent of the oxygen is replaced by chlorine, as represented by the formula:



However expressed, the compound is generally regarded by the best authorities as consisting of 1 equivalent of chlorine, 1 of calcium, and 1 of oxygen. Theoretically it should afford 48.96 per cent. of chlorine; but by reason of its liability to decompose, the chlorine in the commercial article averages only from 80 to 88, and rarely exceeds 86 per cent.; indeed, after being kept a few months, it is oftener found to contain less than 10 per cent. of available chlorine. Its value depending upon the quantity of chlorine, that is readily evolved, and as by exposure portions of the chlorine become fixed by new combinations of chloride of calcium and chlorate of lime, the methods of testing bleaching powder are dependent, not on the absolute quantity of chlorine present, but on that easily displaced. The operation of thus testing its value is termed chlorimetry. One process, in common use by the bleachers, is in determining the quantity of indigo of which a certain amount of the powder will destroy the color. The accuracy of this operation, however, cannot be relied upon, the indigo not being of uniform quality, and its solution being subject to decomposition by keeping. The simplest and most accurate test is the determination of the quantity of sulphate of iron, which, when in solution, is converted, through the influence of the chlorine evolved, into the sesquioxide of iron. The change is known to be completed when a dingy green is given to the liquid on addition of ferricyanide of potassium. This test, as adopted by the U. S. Pharmacopœia of 1850, is thus applied: "When 40 grains of the powder triturated with a fluid ounce of distilled water are well shaken with a solution of 78 grains of crystallized sulphate of protoxide of iron and 10 drops of sulphuric acid, in 2 fluid ounces of distilled water, a liquid is formed, which does not yield a blue precipitate with ferricyanide of potassium (red prussiate of potash)." If the powder contain less chlorine than the proportion required by the Pharmacopœia (25 per cent.), the protoxide will not be all converted into the sesquioxide, and the precipitate with the prussiate of potash will be of blue color.—Beside its use for bleaching purposes, chloride of lime, or chlorinated lime, as it is also called, is employed in medicine as a disinfectant and desiccant. It is applied as a wash for ulcers, burns, cutaneous eruptions, &c.; a gargle for putrid sore throat; and is administered internally in typhoid fever, scrofula, and other diseases. By the facility with which it is made to give up its chlorine, it is a very valuable agent for disinfecting all places exposed to noxious effluvia. It is applied to purify the air of hospitals, ships, &c., and is believed to be influential in preventing the spread of contagion by destroying the pestilential miasma. Animal and vegetable decompositions are checked; and it is thus made useful as an antiseptic. In long voyages it is applied to the purification of the water used on board

ships. One or two ounces are put in a hog-head of water, and after exposure to the air and settling, the quality of this is found to be much improved.

BLEAN, a parish in the county of Kent, England, and the centre of a poor-law union comprising 16 parishes. The forest of Blean was anciently of vast extent, and even as late as the time of Henry VI. it was the scene of wild boar hunts. It has now lost its privileges. Pop. about 600.

BLEDSON, a S. E. county of Tennessee, comprising an area of 480 sq. m., and drained by Sequatchie river. It has an uneven and partly mountainous surface, and in 1850 produced 407,025 bushels of corn, 83,670 of oats, and 42,427 pounds of butter. There were 28 churches, and 600 pupils attending public schools. Mineral coal is found in several parts of the county. Capital, Pikeville; pop. 5,959, of whom 827 were slaves.

BLEECKER, ANN ELIZA, an American poetess, was the youngest daughter of Mr. Brandt Schuyler, born in New York, in Oct., 1752, died at Tomhanick, above Albany, Nov. 23, 1788. She married, in 1769, Mr. John J. Bleeker, lived with him one year at Poughkeepsie, then removed to Tomhanick, whence she was driven by the news of the approach of Burgoyne's army. Her husband had already left to provide means of escape, when she was obliged to fly on foot, in the midst of her family, and of a crowd of other helpless persons, for refuge from the advancing savages. After enduring great horrors and distresses, they made their escape to Albany, and thence by water to Red Hook, where they remained until the surrender of Burgoyne enabled them to return to their home. In 1781, her husband was captured, with two of his laborers, while working in a field, and carried off toward Canada, but intercepted by a party from Bennington. She visited New York in the spring of 1783, but found the changes of time and war oppressive to her sensitive mind. Her poems were written as suggested by occasions, without a view to publication. She possessed a sportive fancy, with much tenderness of feeling, but the sad experiences of her life produced upon her such an effect, that she destroyed "all the pieces that were not as melancholy as herself." Her poems are to be found in the earlier numbers of the "New York Magazine," and a collection of her stories and "poetics" in a volume published in 1793, by her daughter Margaretta.

BLEGNO, or BLENJO, also BRENNO, a river of Switzerland, flowing into the Ticino (or Tessin), near Biasca. A fertile district of the canton of Ticino, called the *Val-di-Blegno*, derives its name from this river.

BLEMMEYES, a nomadic tribe of Ethiopia, fabled to have been without heads, their eyes and mouths being placed in their breast.

BLENDE (Germ. *blenden*, to dazzle), a common ore of zinc, the sulphuret, composed of sulphur 83, zinc 67; often found in shining crystals, whence

its name. It is of resinous or adamantinelustre; of yellow, brown, black, and rarely red, green, and white colors; of hardness 3.5 to 4, and specific gravity 4.063. It accompanies galena, the common ore of lead, and is found in numerous localities, in the metamorphic rocks and the secondary limestones and sandstones throughout the country. Though so abundant, and so rich in metal, it is found difficult of reduction, and no use is made of it in this country. The English employ it to some extent, and its price has been about \$15 per ton, half the value of calamine, the silicate of zinc, which is not quite so rich an ore. The Chinese reduce the sulphuret successfully.

BLLENHEIM, or BLLENHEIM, a village about 28 miles from Augsburg, in Bavaria, the theatre of a great battle, fought Aug. 13, 1704, between the English and Austrians, under Marlborough and Prince Eugene, and the French and Bavarians, under Marshal Tallard, Marsin, and the elector of Bavaria. The Austrian states being menaced by a direct invasion on the side of Germany, Marlborough marched from Flanders to their assistance. The allies agreed to act on the defensive in Italy, the Netherlands, and the lower Rhine, and to concentrate all their available forces on the Danube. Marlborough, after storming the Bavarian intrenchments on the Schellenberg, passed the Danube, and effected his junction with Eugene, after which both at once marched to attack the enemy. They found him behind the Nebel brook, with the villages of Blenheim and Kitzingen strongly occupied in front of either flank. The French had the right wing, the Bavarians held the left. Their line was nearly 5 miles in extent, each army having its cavalry on its wings, so that a portion of the centre was held by both French and Bavarian cavalry. The position had not yet been properly occupied according to the then prevailing rules of tactics. The mass of the French infantry, 27 battalions, was crammed together in Blenheim, consequently in a position completely helpless for troops organized as they were then, and adapted for line fighting in an open country only. The attack of the Anglo-Austrians, however, surprised them in this dangerous condition, and Marlborough very soon drew all the advantages from it which the occasion offered. Having in vain attacked Blenheim, he suddenly drew his main strength toward his centre, and with it broke through the centre of his opponents. Eugene made light work of the thus isolated Bavarians, and undertook the general pursuit, while Marlborough, having completely cut off the retreat of the 18,000 Frenchmen blocked up in Blenheim, compelled them to lay down their arms. Among them was Marshal Tallard. The total loss of the Franco-Bavarians was 30,000 killed, wounded, and prisoners; that of the victors, about 11,000 men. The battle decided the campaign, Bavaria fell into the hands of the Austrians, and the prestige of Louis XIV. was gone. This battle is one of the highest

tactical interest, showing very conspicuously the immense difference between the tactics of that time and those of our day. The very circumstance which would now be considered one of the greatest advantages of a defensive position, viz., the having 2 villages in front of the flanks, was with troops of the 18th century the cause of defeat. At that time, infantry was totally unfit for that skirmishing and apparently irregular fighting which now makes a village of masonry houses, occupied by good troops, almost impregnable. This battle is called in France, and on the continent generally, the battle of Hochst dt, from a little town of this name in the vicinity, which was already known to fame by a battle fought there on Sept. 20 of the preceding year.

BLANNERHASSET, HARMAN, the most noted victim of Aaron Burr's conspiracy, born in Hampshire, England, about 1769, died in the island of Guernsey, in 1831. He was of Irish descent. He was called to the Irish bar, but becoming discontented with the position of Ireland, and indulging no hopes of her emancipation, he resolved on emigrating to America. He married Miss Adeline Agnew, a lady of remarkable beauty and accomplishments, sold his Irish estates, and sailed for New York in 1797. There he remained for several months, engaged in studying the topography of the New World, and, at length, attracted by what he heard of the region of Ohio, then almost a wilderness, he resolved on emigrating thither. He was a man of handsome fortune, and of romantic tastes; and in the spring of 1798, having spent the previous winter at Marietta, he purchased a small island in the Ohio river, called Backus Island, about 2 miles below Parkersburg. This spot of 170 acres he proceeded to clear, and call after his own name; and he then erected on it a noble mansion, which he filled with rich furniture, while the grounds were elaborately cultivated and adorned. In the course of a few years, Blennerhasset spent not less than \$60,000 in embellishments; and being a man of letters, of elegant manners, and genial tastes, his home became one of the most attractive places in the American states. The stranger who was so fortunate as to be properly introduced, found, to his surprise, that amid the rugged wilds of Ohio, he was surrounded by comforts and elegance. He discovered in his hostess one whose commanding beauty of person was enhanced by the charms of elegant culture. In the husband he saw the man of refined mind, surrounded by books and philosophical apparatus, who had voluntarily sought his romantic seclusion. In 1805, during Blennerhasset's absence from home, Burr came to the island in company with a female companion, ostensibly to gratify his curiosity. Mrs. Blennerhasset discovering who he was, invited him into the house, and an acquaintance was thus commenced. At this time Burr was fully resolved upon his Mexican schemes; and as Blennerhasset was then regarded as one of the most prominent char-

actors in the western country, he resolved to gain his confidence, and induce him to embark in his enterprise. In December, 1805, Burr addressed an insinuating letter to Blennerhasset, regretting not having made his acquaintance, flattering him with hints of his talents and adaptation for public affairs, and urging him again to take an active part in life. He held out inducements that 'his time might be advantageously occupied, and his fortune increased, to which Blennerhasset, who now found his property gradually diminishing, gave too ready a hearing. Burr's letter was soon answered, Blennerhasset, who imagined the country to be on the eve of a war with Spain, expressing a desire to engage in any enterprise which promised sufficient reward. In August, 1806, Burr again visited the island. In a short time, both Blennerhasset and his wife were fully committed. Blennerhasset now largely invested his means in boats, provisions, arms, and ammunition. He left his home and family and went to Kentucky, where being warned of Burr's real designs, he returned to the island greatly disheartened. However, through Burr's repeated solicitations, and the persuasions of his wife, who had now enlisted in the undertaking with her whole soul, he persisted. A proclamation against the scheme having been published by President Jefferson, Blennerhasset, who was in hourly expectation of being arrested by Col. Phelps of Parkersburg, escaped from the island Dec. 10, in company with a Captain Comfort Tyler, and managing to elude pursuit joined Burr's flotilla at the mouth of the Cumberland river. Col. Phelps's party arrived at the island to find it deserted, and while their commander was temporarily absent at Point Pleasant, in an ineffectual attempt to arrest Blennerhasset, the men committed the most wanton outrages, burning the fences, destroying the shrubbery, and hacking the furniture. Mrs. Blennerhasset bore her part during all these trying scenes with great composure, and at length in the dead of winter set out in a wretched boat to join her husband. She was disappointed in not seeing him at the mouth of the Cumberland, but on the Mississippi at the entrance of Bayou Pierre she with her children was restored to him.—Burr's scheme resulting in total failure, he surrendered himself to the United States authorities. Blennerhasset having been arrested was discharged, and imagining that he had nothing more to fear from the government, left Natchez in June, 1807, with the intention of revisiting his island and fully examining into his shattered fortunes. On his way he stopped at Lexington, Ky., and while there was arrested and thrown into prison. Having secured the legal services of Henry Clay, he endeavored to procure his discharge by the court. But this was not granted, and he was forced to proceed to Richmond, under guard, to take his trial for treason. Burr, tried upon 2 indictments, was declared not guilty; and those against the other conspirators were never prosecuted. Bankrupt in fortune, and

broken down in mind, Blennerhasset returned to Natchez. His island had been seized by creditors, every thing upon it which could be converted into money had been sold at ruinous sacrifice, and the beautiful grounds were used for the culture of hemp. Coming into possession of a sum of money, by what means it is not certainly known, he now bought 1,000 acres of land near Gibson's Port, Mississippi, for a cotton plantation; but the war of 1812 prostrated all commercial enterprises. While settled at this place, he heard of the destruction of his former home at the island by fire, the house, used as a store-house for hemp, having accidentally been fired by some careless negroes. Becoming continually poorer, in 1819 he removed with his family to Montreal, but there again was disappointed. He sailed for Ireland in 1822, to prosecute a reversionary claim still existing there. In this he failed; nor did he meet with any success in his application for aid to the marquis of Anglesey, whom he had formerly known. In 1842, Mrs. Blennerhasset returned to America, and memorialized congress for a grant of money for the spoliation of her former home. The petition would doubtless have been successful, but before it could be acted upon, she died in New York in most abject poverty, and was buried by strangers.

BLERÉ, a town in France, department of Indre-et-Loire; pop. in 1856, 3,676. In the vicinity stands the castle of Chenonceaux, one of the most interesting objects in this part of France. Originally a simple manor house, it was enlarged during the reign of Francis I. to its present dimensions. Henry II. purchased it in 1535, and bestowed it, together with the duchy of Valentinois, on the celebrated Diana of Poitiers, who, before completing the magnificent embellishments which she had commenced, was forced to yield it to her rival, Catharine de' Medici. The latter adorned the castle still more richly than her predecessor, and surrounded it with a beautiful park. It afterward came into the possession of the house of Condé, and after many vicissitudes was purchased in 1738 by Gen. Dupin, a gentleman distinguished less perhaps by his own learning than by the wit and beauty of his wife. Graced with the accomplishments of Madame Dupin, Chenonceaux became the resort of some of the most celebrated men of the 18th century. Montesquieu, Buffon, Voltaire, Fontenelle, Bolingbroke, and others, were among its frequent visitors. The castle is built on a kind of bridge across the Cher, and has a long gallery reaching from one side of the river to the other. The architecture, furniture, and decorations are all of the time of the Valois. It is still in excellent preservation.

BLESSING. See BENEDICTION.

BLESSINGTON, MARGARET, countess of, an Irish literary lady, chiefly celebrated for her popular social qualities and her brilliant receptions at Gore House, born Sept. 1, 1789, at Car-

rabean, in the county of Waterford, died June 4, 1849, in Paris. Her maiden name was Power. Her first husband, Capt. Farmer, whom she married in 1804, died in 1817. In the following year she married Charles John Gardner, earl of Blessington, with whom she resided chiefly in Italy and France. Soon after his death, which took place at Paris in 1829, Lady Blessington went to reside in Gore House, at Kensington, a splendid mansion, bequeathed to her by her husband in addition to other property, which enabled her to dispense hospitalities on a large and brilliant scale. But the English ladies kept aloof, as her intimate relation with Count d'Orsay, a celebrated lion in London society, and the peculiar circumstances under which he had been married to and shortly afterward separated from the daughter of Lady Blessington, gave rise to unpleasant rumors, which, whether well founded or not, militated against the countess in the minds even of many persons who otherwise admired her fascinating character. For a long time, however, her house was the rendezvous of the principal men of Europe, especially those eminent in letters. Her Irish warmheartedness and her ready sympathies endeared her to a wide circle of friends, but pecuniary difficulties, partly brought about by her embarrassed estate in Ireland, partly by her expensive style of living, put an end to these social gatherings, and Gore House was sold by public auction. In the spring of 1849 she repaired to Paris in order to be near to Louis Napoleon, whom she had befriended in London, but died shortly after her arrival. Her pen had in her days of trouble been frequently a source of pecuniary relief to her. She made her debut as an authoress in 1825, with some London sketches entitled the "Magic Lantern," which were followed by "Travelling Sketches in Belgium." Her "Conversations with Lord Byron," published first in 1832 in the "New Monthly Magazine," afterward appeared in book form, and excited a certain degree of interest from the relation in which she had personally stood to Byron in Italy. Subsequently she published "Desultory Thoughts and Reflections," and several novels, among them "Grace Cassidy, or the Repealers;" the "Two Friends;" "Meredith;" "Strathern;" "Marmaduke Hubert;" the "Governess;" the "Victims of Society," &c. The "Victims of Society" is considered as one of her best works. Beside her novels, which were almost all translated into German, and which especially found a large circle of readers among ladies, she wrote illustrated books of poetry, and books of travels, as "The Idler in France," and "The Idler in Italy," and at the same time, she was an active contributor to many English magazines, and the editor of fashionable annuals.

BLICHER, STEEN SREENSEN, a Danish novelist and poet, born in the province of Viborg, Oct. 11, 1782, died March 26, 1848. He studied theology, officiated for many years as pastor in Jutland, and published translations of Ossian in

1807. Subsequently, from the Scandinavian spirit which prevailed in his poems and novels, and the qualities of his style, he was called the Walter Scott of the North. Of feeble health and oppressed by domestic sorrows, he withdrew to the wildernesses of Jutland, but shortly before his death he came forth from seclusion to deliver lectures in favor of a Scandinavian union, and German translations of them appeared in 1846 and 1849. A complete edition of his works was published at Copenhagen in 1847, in 9 vols.

BLIDAH, or BLIDA, a town in Algiers, on the borders of the Metidjah Plain, captured by the French in 1880, and occupied by them since 1840. Pop. in 1846, 9,108, of whom 2,390 were Europeans.

BLIGH, WILLIAM, an English navigator, born in 1753, died in London, Dec. 7, 1817. He accompanied Cook on his voyages in the Pacific, and when he returned was appointed commander of the Bounty, commissioned by George III. to import the breadfruit tree and other edible fruits of the South Sea islands into the West Indies. He sailed from Spithead for Otaheite, Dec. 23, 1787. Oct. 26, 1788, he reached his destination, and remained there until April 4, 1789. He set sail for the West Indies with a cargo of 774 pots, 89 tubs, and 24 boxes. His ship's crew mutinied, seized him while he was asleep, and put him and his adherents, to the number of 18, on board the launch, which, when set adrift on the wide ocean, was provisioned with a 28 gallon cask of water, 150 lbs. of bread, 32 lbs. of pork, and a small quantity of rum and wine, with a quadrant and compass, but no map, ephemeris, or sextant. They were near the island of Tofoa, at the time of leaving the ship, in lat. 19° S., and long. 184° E. They landed, but were attacked by the natives, and scarcely escaped with their lives. They caught, on their voyage, a few sea birds, and spent a few days among the coral islands off New Holland, where they found some oysters, clams, and dog fish, and rested from the fatigue consequent upon their long confinement in a small boat, buried in the water to the gunwale. June 14, they reached Timor, where they were well received by the Dutch governor. They had in 46 days after the mutiny run in an open boat, by the log, a distance of 8,618 nautical miles without the loss of a single man. After remaining 2 months in Timor they reached Batavia Oct. 1, and proceeded to England, where Bligh arrived March 14, 1790. Of his 18 companions, 5 died and 1 was left behind in Batavia. On the publication of his "Narrative of the Mutiny on board H. M. S. Bounty," public sympathy in Britain was much excited in his favor. He was again (Aug. 1791) sent out to Otaheite with the rank of commander, on the same botanical mission as before, in which he was completely successful, beside discovering some small islands and sowing European kitchen garden vegetables in Tasmania, then called Van Diemen's Land. In

1806 he was made governor of New South Wales, and acted there in such an arbitrary manner that his colleagues, civil and military, agreed to arrest him, and he was sent back to England in Jan. 1808. The home government justified the action and condemned Bligh. This circumstance has led people to believe that Bligh's conduct on the quarter-deck was despotism and inhuman.

BLIGHT, a popular name for various distempers incident to cultivated plants. It may be occasioned by insects either at the roots or in the branches, by cold winds and frosty nights in the spring, or by the ravages of parasitical fungi. It makes the leaves wither, curl up, turn yellow, or fall off, and if not remedied causes the destruction of the plant.

BLIND, *THE*, persons who have either lost, or never possessed, the power of vision. Blindness may be either complete or incomplete. It is complete when there is no consciousness of light, and no ability to discern even the dim form of large objects. It occurs in amaurosis, and in all those cases which are the result of destruction of the ball of the eye. In incomplete blindness, there is a consciousness of light which enables the person to distinguish between day and night, and to discern imperfectly the outline of objects of considerable size. There is a class in most of the institutions for the instruction of the blind called "seeing blind," who are capable of distinguishing objects by some exertion, and who, in consequence of this imperfect vision, are doubly unfortunate, lacking the high cultivation of the other senses so commonly attained by the blind, and yet not possessing sufficient vision to be of much service to them. Yet despite this difficulty, some of them have attained to very considerable distinction. The blindness of the celebrated American preacher and lecturer, Rev. W. H. Milburn, is of this description. Blindness, though congenital in many instances, is less frequently so than deafness. When congenital, its causes are generally analogous to those which induce idiocy, deafness, and insanity. Inter-marriage of near relations, scrofula or other diseases of parents, and intemperance on the part of parents, are very common causes. There are many cases, however, which cannot be thus accounted for. Blindness occurring subsequent to birth, is usually the result of purulent ophthalmia, conjunctivitis, iritis, cataract, amaurosis or gutta serena, small-pox, scarlet fever, measles, or accident, from powder, blows on the eye, &c. Of the diseases enumerated, purulent ophthalmia and amaurosis are most fatal to sight. The latter, which consists in paralysis of the optic nerve, is very seldom cured. It was the cause of Milton's blindness. Aged persons frequently become blind from the inability of the lachrymal glands to secrete tears sufficient to lubricate the eye, from absorption of the aqueous humor, opacity of the cornea or lens, &c. Iritis is emphatically a disease of cities, being, except in cases of accident, which are rare, almost invariably one of

the results of syphilitic disease. Persons affected with congenital blindness, and who consequently have no idea of vision, have occasionally been restored to sight by surgical operations, but in most cases the result has been such a confusion of ideas as to make vision of little service for a long time. In a case related by Cheselden, a young man born blind, but whose sight had been restored by an operation, was unable to determine the distance of objects from him by sight, and 7 years after the operation, was accustomed to close his eyes whenever he wished to ascertain their proximity. The diseases of the eye have of late years received much attention, and eminent men have made their treatment a speciality. Most of our large cities have hospitals or infirmaries devoted to the treatment of these diseases, and Jones, Lawrence, Mackenzie, Hays, and others, have published elaborate treatises on the subject. The operation for the cure of strabismus or squinting, which some years ago was very common, is much less resorted to at the present day than formerly. The operations for cataract, which is an opacity of the crystalline lens (couching, or depressing, and dividing the lens to remove it from the field of vision) have resulted in the partial restoration to sight of many blind persons.—The statistics of blindness in different countries reveal some singular facts. As we proceed toward the equator, the proportion of the blind to the entire population increases with great rapidity, and the same fact is observable in the very high latitudes. M. Zeune, the late accomplished director of the institute for the blind at Berlin, some years ago prepared a table on the subject, which subsequent observations on the eastern continent have very nearly verified. The following were the results at which he arrived:

Between 20° and 30° N. lat. the ratio of the blind to the inhabitants is	1 to 100
" 30° and 40°	1 to 300
" 40° and 50°	1 to 800
" 50° and 60°	1 to 1400
" 60° and 70°	1 to 1000
" 70° and 80°	1 to 550

The white glittering sand, and the intense heat of the sun, shining always from a clear sky in Egypt and northern Africa, cause diseases of the eye, and especially ophthalmia, to be very prevalent in those regions, and similar causes prevail, though to a less extent, in southern Europe. Among the densely populated nations of central Europe accidents with gunpowder, small-pox, and other epidemic diseases, are the most frequent causes of destruction of sight. In the temperate regions of the north the number of the blind is comparatively small, but as we approach the arctic circle, the glittering snows, the smoky dwellings, the alternation from the brilliant nights of the arctic summer to the deep darkness of the arctic winter, all exert their influence upon the visual organs. On this side of the Atlantic, however, a different ratio seems to prevail. We have not the means for an accurate comparison, except of

the latitudes between 30° and 45°, but the proportions are very different from those embodied in M. Zeune's table. The ratio of the blind to the entire population of the United States is 1 to 2,328. The states lying between the parallels of 80° and 85°, have 1 to 2,525 inhabitants; between 85° and 40°, 1 to 1,750; between 40° and 45°, 1 to 2,460. Comparing these statistics with those of most of the countries of Europe, we find a great predominance in favor of the United States. According to M. Dufau,

Prussia has 1 blind person to.....	1,401 inhabitants.
Belgium 1 " "	1,316 "
Germany 1 " "	1,300 "
France 1 " "	1,257 "
Sweden 1 " "	1,091 "
Norway 1 " "	566 "
Switzerland 1 " "	1,570 "
Egypt 1 " "	97 "

In Prussia $\frac{1}{11}$ of the whole number are under 15 years of age; in Sweden only $\frac{1}{16}$.

The number of the blind in France is about.....	33,000
" " " Great Britain and Ireland.....	25,000
" " " Russia.....	50,000
" " " Germany.....	30,000
" " " United States.....	10,000

In southern and central Europe the number of blind males exceeds the females; in northern Europe, on the contrary, the females exceed the males.—**INSTRUCTION OF THE BLIND.** Although individuals among the blind have, in all ages, attained to a fair amount of education, yet it does not seem that the idea of making provision for their education, as a class, entered into the minds of either Greeks or Romans. They procured a precarious subsistence by begging by the wayside, or at the entrance of the temples; but there was no one who would teach them more honorable means of obtaining a livelihood, or rescue them from the inseparable evils connected with a life of mendicancy. Nor, amid the noble and philanthropic reforms introduced by Christianity, was there any provision made for the training and instruction of the blind. They begged on as before, though now frequenting the doors of Christian churches instead of heathen temples, and asking alms in the name of Christ instead of *Æsculapius*. There were in each age, however, some who, feeling themselves moved by the impulse of genius, sought for more elevated society, and more ennobling pursuits, than the beggar's position and employment. The first public provision ever made for the blind, is believed to have been the founding of the *Hospice des quinsse vingts* at Paris, by Louis IX., better known as St. Louis, in 1260. It was established by the kind-hearted monarch for the benefit of his soldiers, who, in the campaigns in Egypt, had suffered from ophthalmia. As its name implies, it was intended for 15 score, or 300 blind persons; though for many years past the number of inmates has been about 400, including the families of the blind, who are also domiciled within its walls. Its annual income is about \$80,000. The allowance to a blind man is \$89 per annum; if he is married, this is increased to \$110; if he has 1 child, \$120; if 2, \$180 50, and so on, adding \$10 50 for each

child. Beside these, it has about 600 pensioners, who do not reside at the hospital, but who receive, according to their age and circumstances, \$20, \$30, or \$40 per annum, to aid in their support. Some of those entitled to a residence in the hospice, prefer to remain with their families in other parts of the city; to these a pension of \$50 per annum is paid. No instruction is attempted, and the temptations to a life of indolence are such as to render this asylum any thing but a model institution.—A similar, but less extensive institution, was established at Chartres in the latter part of the 13th century, and in 1850 was further endowed by King John so as to accommodate 120 blind persons. From a variety of causes, the number of inmates dwindled, till, in 1850, there were but 10.—During the 16th century, thoughtful and benevolent men, who had seen with interest the sad fate of the blind, sought to devise processes for their instruction, but with no great success. Attempts were made to print for them in intaglio, that is, with letters depressed below the surface, but finding these illegible to the touch, experiments were made with raised letters, which were made to slide in grooves; these proving inconvenient, an attempt was made by Pierre Moreau in 1640 to cast them in lead, of more convenient form, but from some cause his plan was not successful. In 1670, the Padre Lana Terzi, a Jesuit of Brescia, who had already published an essay on the instruction of deaf mutes, appeared before the public with a treatise on the instruction of the blind. Nearly a century later, the abbé Deschamps, and Diderot, the associate of D'Alembert in the *Encyclopédie*, proposed plans for their instruction in reading and writing. In 1780, Weissenbourg, a blind man of Mannheim, in Germany, published geographical maps in relief. It was not, however, till 1784, that Valentin Haty, "the apostle of the blind," as the French people have appropriately named him, commenced his labors in their behalf. Attracted at first to humanitarian labors by the brilliant example of the abbé de l'Épée, and to this particular department of them by seeing a burlesque concert of blind performers, he devoted himself to the work of instructing the blind with a zeal and ardor which gathered new strength from every obstacle. His first pupil was a young blind beggar, whom he paid a stipend in place of his acquisitions by begging, and who soon proved an apt scholar. The approbation of the academy of sciences and arts, and the patronage of the philanthropic society, encouraged him to further exertion, and in 1786, his pupils, 24 in number, were called to exhibit their attainments in the presence of the king and royal family at Versailles. The royal patronage was secured for the new enterprise, and for a while all went on prosperously; the school increased in numbers and popularity, its pupils became eminent as musicians or mathematicians, and Haty and his school were objects of interest to all. In 1791

a change came. The revolution was fairly inaugurated, the philanthropic society was broken up, and many of its members were wandering homeless in foreign lands. The school for the blind was taken under the patronage of the state, and its support decreed; but as one assembly succeeded another, and the reign of terror made the nation bankrupt, the sums decreed for its support were paid only in assignments, which ere long became almost worthless. Haty and his blind pupils worked at the printing-press, procured in their more fortunate days, and eked out existence by the severest toil. It is said that Haty for more than a year confined himself to a single meal a day, that his pupils might not starve. At length brighter days began to dawn, and prosperity seemed about to revisit them, when they were startled with the intelligence that the directory had united them with the inmates of the *hospice des quinze vingts*, and that thenceforth these unfortunate children were to be exposed to the infectious example of the indolence and vice so rife at that time in that great asylum. Overwhelmed by this intelligence, Haty, who could not bear to see the fruits of 17 years of arduous toil thus wasted, resigned his office as superintendent, and after a brief but unsuccessful effort at private teaching, went, at the invitation of the czar, to St. Petersburg, where he founded an institution for the blind, which still exists. His place was supplied for 12 years by an ignorant and incompetent director, under whom the school had nearly lost all its earlier reputation, retaining only its musical fame, and this more from the efforts of some of Haty's old pupils than from any new instruction. In 1814, the government became satisfied that a great error had been committed in the union of the 2 institutions, and assigned separate quarters and ampler funds to the school for the blind, which, again under the patronage of royalty, assumed the title of the "Royal Institution for the Blind." A Dr. Guillié was appointed director, a man of energy and tact, but malicious, untruthful, and excessively vain. He expelled at once from the school those whose morals had been contaminated by their associations at the hospice, and reorganized it with great pomp and parade. Every thing was done for show. Manufactured articles were purchased at the bazaars, and exhibited as the work of the pupils. Latin, Greek, German, Italian, and Spanish were professedly taught, and the pupils made excellent public recitations in them, by the aid of interlinear translations; while, at the same time, not even the most elementary instruction in arithmetic or history was given, and although a few pupils could play some tunes brilliantly, the great mass could not even read music. Dr. Guillié seemed to regard any reference to Haty as a personal insult; the very mention of his name was interdicted, and every thing he had done studiously attributed to some one else. This system of deception could not last; the

government ordered an investigation, and, unable to endure the scorn which followed the report of the commissioners, Dr. Guillié resigned in 1821. Dr. Pignier was appointed his successor, and though a man of truth and honor, his education, which had been entirely of a scholastic character, rendered him utterly unfit for the post. With the best intentions, the financial and educational condition of the school was constantly growing worse. At length, in 1840, the government undertook, in earnest, its reform. Ordering the erection of new buildings in a more healthful location, they appointed a commission to reform and reorganize the school. On the report of that commission, M. Dufau, who had been for 25 years a teacher in the institution, was appointed director, and has continued in that position up to the present time. M. Dufau is eminently qualified for the place, and has filled it with signal ability. Under his administration, the finances have greatly improved, the course of instruction has been lengthened and systematized, and a judicious course of elementary works having been prepared, printed in relief, the progress of his pupils has been rapid in all the studies they have undertaken. The work department has also been thoroughly reorganized, a society established for the assistance of blind workmen, and the wants of the blind very thoroughly cared for. Indeed, this school, while the oldest, is also in every respect the best, in Europe.—In order to present a just idea of the course of instruction adopted in the training of the blind, we give the following statement of the division of time, and the course of study pursued in the Paris institution, from M. Dufau's work, *Des aveugles*. The pupil rises at 6 o'clock in the morning; from this time till 8, he studies or works; at 8, breakfast; from 8½ till 10½, classes; from 10½ to noon, study or work; at noon dinner; at 1 o'clock reading by divisions, according to age; from 1½ to 7, musical classes, or other studies and work, this interval being only broken by a collation, at 3½; at 7, supper; after which, study and reading, till 9; at 9 all go to bed. Each repast is followed by a half hour's recreation. The studies are thus arranged: *Primary Course*. First year, reading, writing in points, sacred history, elements of music; second year, French grammar, ancient history, geography, arithmetic, elements of music, wind or string instruments; third year, French grammar, Roman history, geography, arithmetic, vocalization and singing, piano and other instruments; fourth year, grammar, arithmetic, natural history, history of France, vocalization and singing, instrumental instruction. *Higher Course*. First and second year, rhetoric, literature, philosophy, political geography, general history, geometry, physics and cosmography, harmony, and the use of musical instruments; third and fourth years, moral sciences, political economy, &c., musical composition, instruction on the organ or other instruments. The tuning of pianos is added to musical studies, in the

TABLE OF INSTITUTIONS FOR THE BLIND IN EUROPE.—(Continued.)

NAME OF INSTITUTION.	Location.	Date of Organization.	Date of latest Information.	Number of Pupils.	Amount of Governmental Appropriation.	Amount of Annual Income.	No. of Teachers.	Name of Director.
Institute for Blind	Palermo, Italy	1850	1858	small	.....	.....	..	Dr. Renzi, assisted by a religious fraternity.
" " "	Rome, "	.....	1854	"	.....	.....	..	S. Barozzi.
" " "	Milan, "	.....	1854	"	.....	.....	..	Hen. Addenbrook.
School for the Blind	Liverpool, England	1791	1855	79	none	24,000	14	
Asylum for Indigent Blind	London, "	1799	1858	154	"	60,000	..	
London and Blackheath Institution	" " "	1838	1850	.....	.....	.....	..
Jewish Asylum for Indigent Blind	" " "	1801	.....	.....	.....	.....	..
Asylum for Blind	Bristol, "	1793	1850	.....	.....	.....	..
" " "	York, "	1835	.....	.....	.....	.....	..
" " "	Norwich, "	1805	.....	.....	.....	.....	..
" " "	Manchester, "	1830	.....	.....	.....	.....	..
" " "	Bath, "	.....	1854	44	.....	.....	4	Mr. Elwood.
" " "	Exeter, "	1844	1854	.....	.....	.....	..
" " "	Newcastle, "	1833	1854	.....	.....	.....	..
" " "	Edinburgh, Scotland	1793	1854	95	.....	.....	..
" " "	Glasgow, "	1828	1845	133	.....	20,500	..	
" " "	Aberdeen, "	1838	.....	.....	.....	.....	..
" " "	Dundee, "	1838	.....	.....	.....	.....	..
Richmond National Institute	Dublin, Ireland	.....	1858	17	.....	.....	..
Ulster Institute for Blind	Ulster, "	.....	1858	18	.....	.....	..
Cork Blind Asylum	Cork, "	.....	1858	29	.....	.....	..

There are, beside the above, the following, and perhaps some other asylums, industrial establishments, and hospitals for the blind in Europe, in which instruction in reading or the other branches of education is not required; the *hospice de quince vingt*, Paris, has 400 inmates, 600 pensioners, income \$80,000; society for aid of blind workmen, Paris, 20 inmates, income in 1850 \$2,860, expenses \$1,820; blind sisters of St. Paul, at Vaugirard, 100 inmates; little blind brothers of St. Paul, near Paris; house of labor for the adult blind, Vienna, 60 inmates, income \$8,900, expenses \$7,800;

hospital for the blind, Vienna, on the model of the *hospice de quince vingt*; industrial asylum for adult blind, Berlin, 20 inmates; the crèche, or hospital for young blind children, Berlin; workshop for blind laborers, Berlin; hospital for the blind, St. Petersburg (the last 2 are asylums rather than hospitals); Simpson hospital for blind and gouty persons, Dublin; Molyneux asylum for blind females, Dublin; Limerick asylum for blind females, Limerick; London asylum for the blind, London; Jewish asylum for the indigent blind, London; asylum for indigent blind, Amsterdam, 80 inmates.

INSTITUTIONS FOR THE BLIND IN THE UNITED STATES.

NAME OF INSTITUTION.	Location.	Cost of Buildings and Grounds.	Date of Opening.	Date of latest Information.	Number of Pupils.	No. of State Beneficiaries.	Annual Amount received from States.	Annual Current Expenses.	Charge to paying Pupils.	Name of Superintendent.	Number of Instructors.	No. of Blind Instructors.	Number of Graduates.
Perkins Institution and New England Asylum.	Boston, Mass.	\$150,000	1832	1856	114	62	\$12,000	\$21,600	\$200	S. G. Howe, M. D.	6	8	811
New York Inst. for Blind.	New York.	150,000	1832	1856	135	150	20,000	33,728	200	T. Colden Cooper.	16	11	561
Pennsylvania " "	Philadelphia.	125,000	1833	1857	134	100	23,500	28,532	200	William Chapin.	17	11	840
Ohio " "	Columbus.	40,000	1837	1857	98	*	18,000	18,000	100	Asa D. Lord, M. D.	8	2	215
Virginia Institution for Deaf & Dumb & Blind.	Staunton.	75,000	1839	1855	85	35	10,000	11,000	160	J. C. Merillat, M. D.	9	2	98
Kentucky Inst. for Blind.	Louisville.	70,000	1842	1857	60	60	11,000	11,000	140	B. M. Patton.	5	2	45
Tennessee " "	Nashville.	15,000	1844	1835	28	25	4,000	4,500	200	J. M. Sturtevant.	5	3	8
Indiana " "	Indianapolis.	100,000	1847	1857	73	*	15,000	15,000	100	J. M. Workman, M. D.	6	6	6
Illinois " "	Jacksonville.	80,000	1849	1857	60	*	14,000	14,000	100	Josh. Rhoads, M. D.	4	2	8
Wisconsin " "	Janesville.	45,000	1850	1857	20	*	7,000	7,000	100	W. H. Churchman.	4	2	8
Missouri " "	St. Louis.	45,000	1851	1854	21	*	8,000	8,000	100	E. W. Whelan.	4	2	8
Mississippi " "	Jackson.	11,000	1843	1857	20	20	7,000	7,000	100	P. Lane.	4	2	8
Georgia Academy	Macon.	27,800	1852	1857	20	17	4,000	4,000	200	W. N. Caudoin.	4	1	6
Iowa Institution	Iowa City.	6,000	1858	1856	23	*	4,339	4,339	200	Samuel Bacon.	4	1	6
Louisiana Institution for Deaf & Dumb & Blind.	Baton Rouge.	128,000	1859	1855	.....	.....	5,000	5,000	150	J. S. Brown.	3	1	1
Maryland Inst. for Blind.	Baltimore.	.....	1854	1857	17	17	.....	.....	200	L. A. McKenney, D. D.	3	1	1
Michigan Institution for Deaf & Dumb & Blind.	Flint.	150,000	1854	1857	24	*	3,000	3,000	150	B. M. Fay.	2	1	1
North Carolina " "	Raleigh.	8,000	1848	1856	.....	.....	8,000	8,000	150	William D. Cooke.	2	2	2
South Carolina " "	Cedar Spring.	12,581	1849	1856	18	18	7,000	7,000	150	N. P. Walker.	2	2	2
Columbia " "	Wash., D. C.	.....	1857	1857	.....	.....	.....	.....	150	E. W. Gallaudet.	2	2	19

* Free to all the blind of the State, under 30 years of age.

Printing for the Blind.—It was not long after Haty commenced the instruction of his blind pupils, that he became convinced of the necessity of devising some mode of printing by which touch might supply the place of sight to the reader; and, after revolving several plans in his mind, accident finally suggested the best method. Sending his pupil, Lesueur, to his desk one day, for some article, the young man found there a printed card of invitation, which had received an unusually strong impression; passing his fingers over the back of the paper, he distinguished the letter O, and brought the paper to Haty to show him that he could do so. The philanthropist saw, at a glance, that the principle of printing for the blind was discovered, and that it was only necessary to perfect the process. He experimented for a long time on the form of letter best adapted to be read by touch, and finally adopted the Illyrian, which, from the square form of the letters, seemed to offer more distinct points of recognition than any other. But, unfortunately, his letters were too large, and the embossing so imperfect as to make it difficult for those whose tactile sensibility was too defective to read them. His successor, Dr. Guillié, adopted a different form of letter in the place of the Illyrian, and boasted greatly of the perfection of his type; but the 22 volumes published by him were found illegible by the blind, and were mostly sold to the shops for refuse paper. Dr. Pignier, who succeeded him, probably introduced the script letter, which, with some modifications to promote greater sharpness of embossing, is still used on the continent, at Paris, Berlin, Vienna, Pesth, Amsterdam, and St. Petersburg, in all of which cities printing for the blind has been executed. In England, Mr. James Gall, principal of the Edinburgh institution for the blind, commenced, in 1826, a series of experiments with a great variety of alphabets, with a view of ascertaining which was best adapted to the purposes of the blind. The alphabet upon which he finally fixed is known as Gall's triangular alphabet. He published several small books in it, but repeatedly modified its form, till at last it approximated to the Roman alphabet. These books have never come into general use among the blind, although quite legible. They were printed in 1832, and the 5 following years. A more popular and attractive form of letter was adopted, nearly simultaneously, in Great Britain and in the United States. It is known in the former country as Alston's, and in the latter as the Philadelphia letter. It is the Roman capitals, with a light sharp face, and deprived of the serifs or hair lines, forming a type analogous to that known among type-founders and printers as sans-serif. Dr. Fry is said to have been the first to suggest its use in England, and Mr. Friedlander, the founder of the Philadelphia school for the blind, had, at a period somewhat earlier, adopted it here. Dr. Russ, the founder of the New York institution, devised a phonetic alphabet in 1833, which possessed considerable

merit, but did not come into use to any great extent. The alphabet for the blind, which is most generally used in Great Britain and America, is the Boston letter, invented and perfected by Dr. S. G. Howe, the founder of the Perkins institution for the blind. Its peculiarities, which it would be easier to distinguish than to describe, are, the angular form of the letters; the rigid adherence to what printers call the lower case letters; the marked distinction between those which are ordinarily most nearly alike in form; its compactness, and the sharpness and perfection of the embossing. On account of these qualities, which rendered it more easily legible by the blind than any other, and reduced the cost of printing, the jury on printing, at the London crystal palace exhibition, gave it the preference over the other styles of type for the blind. The number of books in this letter is much greater than in any other.—We have already adverted to Dr. Russ's invention of a phonetic alphabet; the introduction of arbitrary characters has been repeatedly attempted in printing for the blind, and with all the advantages of large funds to prosecute the work, but it has proved practically a failure, because the blind have found it more difficult to acquire these arbitrary alphabets than the ordinary English letters; and because their use in writing or reading would only put them in communication with the few who had acquired these systems, and thus would lead to the greater isolation of the blind as a class. Three of these alphabets have been put forth in England, and in each there have been several books (the Scriptures among the number) published, and each has been proclaimed as a great advance on every previous method of teaching the blind. They are known as Lucas's, Frere's, and Moon's, the inventors being principals respectively of the Bristol, London and Blackheath, and Brighton asylums for the blind. We ought not to omit here a reference to an ingenious apparatus used as a substitute for books and manuscripts, which was the joint invention of 2 blind men, Messrs. Macbeath and Milne of the Edinburgh institution, in 1830. We allude to the string alphabet—a mode of designating by the form and distance of knots, on a cord, the different letters of the alphabet. This invention, though cumbrous and capable of material improvement, was for many years in use in the Edinburgh institution, though never generally adopted elsewhere.—The great cost of printing books for the blind, in consequence of their bulk and the small editions required, has rendered the supply very scanty. Aside from the Scriptures, and the text books in use in the different institutions, there were, in 1856, but 46 miscellaneous books in English, printed in relief, unless we include those printed in the arbitrary characters, which aside from the Scriptures amounted to 9 volumes more. Many of these are quite small, some comprising only a very few pages; yet these 55 volumes, if sold at actual cost, would amount to about \$70. Provision should be

made by the governments of Great Britain and the United States for a fund to be devoted to the production of books for the blind. The variety of books published for the blind on the continent of Europe, is still smaller. The French catalogue, which is by far the largest, contains, beside the necessary text-books, only a very few religious books, lives of the saints, &c. The Dutch catalogue has but 12 volumes in all, several of which are single books of the Scriptures, nor are the others more extensive.—The printing of music for the blind, which seems a necessity, from the resource which it furnishes for a comfortable livelihood to many of them, has been a very expensive and difficult matter—so much so, that music is to a very great extent committed to memory by the pupils of blind institutions. This difficulty has been obviated by an ingenious system invented by a French teacher in the institution at Paris, himself blind, M. Louis Braille.—It has always been a problem extremely difficult of solution, to teach the blind to communicate their ideas by writing, in such a way that they themselves should be able to read what they had written. By a very simple apparatus they could be taught to write with considerable rapidity, but the words once committed to paper were lost to them; tangible inks, intaglio-type, pin-type, a small printing apparatus, all were tried, and each found in some respects objectionable. M. Ch. Barbier, in 1825, had invented a system of writing with points, in which he represented, by certain arrangements of points, about 40 sounds. His plan was faulty, both as a phonetic system and a system of writing, requiring as it did the use of 10 or 12 points for almost every sound. M. Louis Braille modified Barbier's system completely, rendering it far more simple, and representing by each character some letter or combination of letters. His plan is based upon a series of fundamental signs, comprising the first 10 letters of the alphabet; none of these consists of less than 2 nor more than 4 dots. The perforations are made from right to left, in order that the writing, when reversed, may be read from left to right. This system has been introduced into the French, Prussian, Austrian, Belgian, Swedish, and Dutch schools in Europe, the New York, Maryland, and Illinois institutions in the United States, and the imperial institute for the blind at Rio Janeiro. (See BRAILLE.)—From the first commencement of instruction for the blind, music has been a favorite pursuit with them. To many it furnishes the means of support; for the blind have often, from their sensitiveness to sound and the delicacy of their touch, as well as from their careful modulation of their voices, extraordinary qualifications for acquiring great skill in instrumental and vocal music. To some it is an agreeable recreation, and to others a source of pure and intense enjoyment. All, however, cannot practise it, and while some find employment in the tuning of pianos, for which a well-trained ear and skilful touch are requisite, others are occupied

in the manufacture of mattresses, mats, baskets, paper boxes, brooms, brushes, the simpler departments of cabinet-work, or in trade. The capacity of the blind as a class to sustain themselves by their own labor, has been one of those practical questions which hardly admit of a complete or satisfactory solution. All, or nearly all, the schools for the blind have workshops, in which the pupils labor some hours every day, in order to acquire some handicraft which may aid in their support. Most of the larger institutions of the United States have also connected with them workshops for the adult blind, either their own graduates or others, where certain advantages of shop-rent, machinery, material at wholesale prices, or sale of goods at retail prices, and in some instances board at a reduced rate, or a moderate pension to aid in paying their way, is allowed. Objections have been made to these measures of assistance, but in the fierce competition for subsistence among the poorer classes, we see not how the poor blind man, who has the loss of sight added to the other disabilities of poverty, is to exist without it. In one instance (at Philadelphia), an asylum has been provided for the aged and infirm blind, where, beguiling the weariness of the passing hours by such light toil as they can readily accomplish, they may pass the evening of life in comfort and happiness.—The British institutions for the blind are mostly asylums rather than schools. In the greater part the blind are received for life; their educational training consists merely in reading, musical instruction, and perhaps the most elementary knowledge of figures; but they are taught trades, and required to work a certain number of hours every day. These institutions are, for the most part, well endowed; and any deficiency in the results of the labor are made up from other funds. On the continent there are, in the larger cities, asylums of a character nearly corresponding to the *hospice des quinsse vingts*, already described, for the infirm, and even the healthy blind. Berlin has especially distinguished itself for the completeness of its provisions for every class of the blind. Beside the institute for the young blind, it has a crèche or hospital for blind infants; a workshop for blind laborers, furnishing material and paying a pension to the blind laborer; an industrial asylum for the blind of both sexes, who have graduated at the institute, and are unable to obtain a complete support elsewhere; and a hospital for blind foreigners, and for the sick, aged, and infirm blind.—The blind, as a result of their infirmity, have some peculiarities, though fewer than mere theorists have attributed to them. In youth they are generally very happy, and even gay. As they arrive at adult age, they are more disposed to be restless, uneasy, desirous of change, and discontented with their condition. It is under these circumstances that some writers have been disposed to charge them, as a class, with ingratitude. The charge is unjust. In-

dividuals among them, as among the seeing, undoubtedly often manifest an ungrateful disposition, but this is rather the result of the restless temperament already noticed, than of unusual depravity. They are generally endowed with very keen perceptions, and are usually better judges of character than persons who can see. Diderot charges them with being devoid of the idea of modesty or shame; but if this charge was the result of observation, he must have mingled with a different class of blind persons from those found in other countries. That modesty of deportment, which is one of the highest graces of womanhood, is nowhere found in greater perfection than among the blind. The consciousness of physical weakness

has probably had its effect in rendering them generally less vain than deaf mutes; while at the same time their intellectual faculties are usually of a higher order, and the facility in the acquisition of knowledge is much greater.—The number of blind persons who have attained distinction, either in science or art, is very large. We give a list of the most eminent, omitting many whose abilities perhaps entitle them to a place. A part of the materials for this list is derived from one compiled by Mr. Charles Baker, of the Yorkshire institution for the deaf and dumb, for the "Penny Cyclopædia," but we have added a number of names which he had omitted, or which have more recently become celebrated.

EMINENT BLIND PERSONS.

NAME.	Country.	Born or flourished.	Died.	At what age became blind.	For what celebrated.	Works written during blindness.
Diodotus	Asia Minor,	B. C. 50		Atadulthood,	Philosophy, Geometry, & Music.	
Ensebius the Asiatic..	" "	A. D. 815	A. D. 840	At 5 years,	Philos. & Divinity.	Several theological works.
Didymus of Alexandria	Egypt,	813	898	" "	Rhetoric, Music & Theology.	Treatise on the Holy Spirit.
Corn. Aufid. Bassus...	Rome,			In youth,	Philos. & Geom.	A Greek History.
Achmet ben Sollman...	Arabia,	978	1059	At 3 years,	Poetry.	
Henry the Minstrel...	Scotland,	1361		Born blind,	Poetry.	Life of Wallace.
Sir John Gower.....	London,		1408		Poetry & History.	Confessio Amantis, &c.
Nicolas of Malines.....	Belgium,		1492	At 3 years,	Law and Divinity.	Canon and Civil Law.
Peter Pontanus.....	Bruges, Bel.,	15—		" "	Philos. and Liter.	On Rhetoric, &c.
Margaret of Ravenna..	Rusny, near Ravenna,		1505	At 3 months,	Theology and Morals.	
James Schegkian, of Thorndor,	Württemberg,		1587	In youth,	Philosophy and Medicine.	Several Medical Treatises.
John Fernand	Belgium,			Born blind,	Poetry, Philos., Logic, & Music.	
Uldario Schomberg.....	Germany,	16—		At 3 years,	Languages.	
Herman Torrentius.....	Switzerland,	1450	1520		Literature.	Hist. and Poet. Dictionary.
John Paul Lomazzo.....	Milan, Italy,	1588	1592	At 17 years,	Painting & Liter.	"Idea del Tempio della Pittura."
Francisco Salinas.....	Spain,	1512	1540	In childh'd,	Greek, Mathematics and Music.	De Musica.
Count de Pagan.....	Marseilles,	1604	1645	At 38 years,	Mathematics, Mechanics & Astron.	Geom. Theorems; on Fortifications; Theory of Planets, &c.
Prosper Fagnani.....	Rome,	1661			Law.	Commentary on the Laws.
Claude Comiers.....	Dauphiny, France,		1663		Medicine, Mathematics, & Physics.	Art of Prolonging Life.
Bourehenr de Valbonais,	Grenoble, France,	1651		In infancy,	History,	History of Dauphiny, &c.
Nicholas Sanderson...	Yorkshire, Eng.,	1663	1739	At 1 year,	Mathematics, Astronomy, &c.	Treatise on Algebra.
Henry Moyes.....	Kirkaldy, Scot.,	1750	1807	At 3 years,	Music, Mathemat. & Nat. Philos.	
Thos. Blacklock, D. D.	Annan, Scot.,	1731	1791	At 6 months,	Poetry, Divinity & Music.	Poems, Sermons, &c.
Theophilus Conrad Pfeffel,	Colmar, Ger.,	1736	1809	In infancy,	Poetry—an eminent teacher,	Fables. 6 vols. 8vo.
M. Welsembourg.....	Mannheim, "	ab. 1740		At 7 years,	Geography.	Maps in relief, &c.
François Huber.....	Geneva,	1750	1881	At 17 years,	Natural Science,	On Bees and Ants; on Education.
John Gonelli.....	Cambasol, It'y			At 20 years,	Sculptor.	
John Gambastus.....	Volterra, "			" "		
Mlle. de Paradis.....	Germany,	ab. 1768		At 2 years,	Music,	Musical Compositions.
M. Caruili.....	Nantes, Fr'ce,		1789	From birth,	"	Guitar instructor.
Anna Williams.....	Wales,	1706	1783	At 34 years,	Poetry,	Miscellanies in Prose and Verse.
John Milton.....	London,	1608	1674	At 44 years,	Poetry,	Paradise Lost, &c.
Rev. John Troughton...	Coventry, Eng.,	1687	1661	At 4 years,	Theology,	Several Nonconformist Works.
Leonard Euler.....	Basel, Switz.,	1707	1783	At 59 years,	Mathematics and Astronomy,	Algebra & other Scientific Works.
John Stanley.....	London,	1713	1796	At 3 years,	Music,	Oratorios: Jephtha, Zimri, &c.
— Parry (the Welch Harper),	Wales,			In infancy,	"	
Edward Eushton.....	Liverpool,	1756	1814	At 19 years,	Poetry, Polit., &c.	Poems; Lett. to Washington, &c.
John Metcalf (Blind Jack),	Knarsborough, Eng.,	1717	1803	At 6 years,	Road Surveyor & Contractor.	
John Gough.....	Kendal, Eng.,	1757	1835	At 3 years,	Botany and Natural Philosophy,	Communications to Scientific Periodicals.
— Arisse.....	France,	1773	1801	In youth,	Grammar, Logic, and the Drama.	
— Buret.....	"			At 25 years,	Sculpture.	
John Kay.....	Glasgow,	1777	1809	At 10 years,	Mechanics.	
Sir John Fielding.....	Westminster, Eng.,		1790	From youth,	Police Magistrate,	Universal Mentor.

EMINENT BLIND PERSONS.—(Continued.)

NAME	Country.	Born or flourished.	Died.	At what age became blind.	For what celebrated.	Works written during blindness.
David Macbeth.....	Dalkeith, Scot.	1799	1884	At an early age.	Music and Mathematics.	The String Alphabet.
— Penjon	Paris, France,	1789	ab. 1860	Born blind,	Mathemat. Prof.,	Mathematical Treatises.
— Gaillod.....	" "	1777	" "	" "	Music, &c.,	History of Institute for Blind.
M. Foucault.....	Paris, "	1797	" "	At 6 years,	Mechanics,	Writing Apparatus for Blind.
— Wimbrecht.....	Augsburg, Germany,	" "	" "	" "	Bookseller & Book Collector,	Catalogue of Library (8,000 vols.)
Joseph Kleinhauss....	Tyrol,	1789	1850	At 4½ years,	Carver and Sculptor on Wood.	
M. Knie.....	Prussia,	" "	" "	Born blind,	Director of a Blind Institution,	Treatise on Education of the Blind.
Alexander Rodenbach	Belgium,	1796	" "	At 11 years,	Member of Belgian Congress,	Several works on the Blind and Deaf Mute, &c.
Oliver Shaw.....	Providence, R. I.,	" "	" "	" "	Musical Composer,	Many pieces of music.
M. Moncoultéan.....	Paris,	ab. 1800	" "	Born blind,	Music & Composition,	Improvements on the Organ; Treatise on Harmony; Manual of Musical Transposition, &c.
W. H. Churchman....	Now of Janesville, Wiscon.	" "	" "	" "	Superintendent of Blind Institute,	Architectural Plans, Reports, &c.
M. Montal.....	Paris, France,	1800	" "	At 5½ years,	Mechanics & Music,	Inventor of Improvements on the Pianoforte.
Augustin Thierry.....	" "	1800	1856	At 27 years,	History,	History of Norman Conquest in England, &c.
Gabriel Gauthier.....	Saone et Loire, France,	1808	" "	At 11 mos.,	Musical Composition,	Repertoire du Maître de Chapelle, &c.
Louis Braille.....	Laguy, "	1809	" "	At 6 years,	Musician & Organist, Inventor,	Method of Writing with Points, for the Blind.
Rev. W. H. Milburn..	Now of New York,	1828	" "	Sight almost destroy'd in early childhood,	Preaching and Lecturing,	Rifle, Axe, and Saddle Bags.
W. H. Prescott.....	Boston,	1794	" "	Imper'f vision since 90 yrs of age,	History,	Ferdinand and Isabella; Mexico; Peru; Philip Second, &c.
Frances Brown.....	Ireland,	1818	" "	At 18 mos.,	Poetry,	Star of Atteghel, and other Poems.
Timothy Woodbridge.	Stockbridge, Mass.	1784	" "	At 16 years,	Clergyman & Author,	Autobiography; Discourses
Samuel Willard.....	Deerfield, Mass.	1775	" "	At 48 years,	Clergyman & Author,	Educational Works, Hymns, &c.

Among the instances of remarkable blind men, few are more worthy of record than the case of the Rev. Dr. Samuel Willard, of Deerfield, Mass. Dr. W. is now (1858) in his 83d year, and lost his sight, at least so far as ability to read was concerned, at the age of 48. He was already known favorably to the public by his writings on controversial, musical, and scientific subjects; but the commencement of his blindness seemed the beginning of a new era in his intellectual career. Within the 40 years that have since intervened he has prepared and published: 1, a volume of hymns, composed by himself, each constructed with the purpose of making the rhetorical correspond with the musical rhythm, a work of great labor; 2, a collection of hymns from various authors; 3, a series of 4 primary school books, which have enjoyed a large popularity; 4, "Principles of Rhetoric and Elocution;" 5, "Memorials of Daniel B. Parkhurst," one of his successors in the pastorate of the Congregational church at Deerfield; 6, "The Grand Issue," an ethico-political pamphlet upon the relations of slavery; 7, "An Affectionate Remonstrance" with certain orthodox ministers and periodicals concerning the temper and style of religious controversy; 8, several single sermons. Beside these, he has in manuscript an elaborate essay on phonography, to which subject he has devoted special atten-

tion for many years, and a work on the "Harmony of Musical and Poetical Expression." During a considerable portion of the period in which he has been engaged upon these works he has had the care of a large parish. Dr. Willard is a man of very active habits, and performs with ease and readiness many of those acts for which we are accustomed to regard sight as indispensable. He gathers his own fruit, climbing the trees readily, notwithstanding his age; prunes them carefully and judiciously; digs, lays out, and plants his garden, selecting and sowing the seeds without mistake; saws and carries in his own wood, and seems almost unconscious of his privation. He has for the last 25 years been completely blind, and for 12 years previous had only been able to distinguish large objects indistinctly; but even now, when closeted in his room, visions of the green fields and sunny slopes of the Connecticut valley appear to him as really as when he gazed upon them with the eyes which for so long a period have admitted no light. He denies that this is imagination, but regards it as an exhibition of one of the mysterious modes in which the mind may hold communication with the outer world without the aid of the senses. Notwithstanding his great age, there are no symptoms of failure in his intellectual powers. He has always contended that the loss of memory and

the vitiation of the other mental faculties in the aged were the result of mental inactivity; and as his own years rolled on, resolved to test his theory on his own case. In April, 1857, at his own request, his memory was severely tested by a friend. Of 110 passages of Scripture selected at random from both the Old and New Testaments read to him, he gave, in nearly every instance, the book, chapter, and verse correctly at once. Of 40 lines taken at random from his "Hymns," he gave the hymn, verse, and line in nearly every instance. His memory was tested in regard to the graduates of 7 colleges, whose names were called from the triennial catalogues, and he gave readily the college and year of graduation of all persons with whom he was acquainted, of all distinguished public and professional men, of all judges, presidents, and professors of colleges, members of the American academy, &c. —A recent instance of a blind man pursuing his mental cultivation and practising the duties of a profession with eminent success, is that of the blind minister, the Rev. Dr. Timothy Woodbridge, now living at Spencertown, N. Y. He was born at Stockbridge, Mass., in 1784; his mother having been a daughter of the elder President Edwards, and one of his cousins the renowned Aaron Burr. During his 2d year in college he lost the sight of one eye by weakness and inflammation, caused by hard study and heightened by a severe cold. His remaining eye seemed at first strengthened in keenness and power by the loss of the first, but before his college period was finished it became in like manner inflamed, and its sight was gradually extinguished. Mr. Woodbridge bore his misfortune with a philosophic and buoyant temper, received the commiseration of his associates with indifference or contempt, and at once accommodated his plans to the new circumstances in which he was placed. Selecting the profession of law, he formed large schemes of study, and with the aid of numerous young gentlemen who read to him, he not only mastered legal works, but studied thoroughly ancient and modern history, and went over the whole range of English classics from the age of Elizabeth. He was cherishing political aspirations, and had gained some distinction as a political orator, when in 1809, his attention being strongly drawn to the subject of religion, he experienced a religious change, and determined to devote himself to preaching the gospel. He pursued theological studies at Andover, became acquainted with the most eminent ministers of the time, was admired as a preacher when he began the practice of his profession, and was for 24 years pastor at Green River in the state of New York. It was his custom to have a young man with him who was skilful in reading and writing, and to whom he often dictated the heads of his sermons in order to stamp them the more deeply on his own memory. Yet he had so well trained himself that on Saturday evening he always had distinctly in mind not

only the substance but generally the form and language of the 2 or 3 sermons which he was to deliver the next day. He was uniformly cheerful, and loved society; and his recently published autobiography is interesting not only from its genial and happy tone, but for its judicious reflections upon many notable men and books.—The Rev. William H. Milburn, another remarkable example of genius triumphing over apparently insuperable difficulties, was born in Philadelphia, Sept. 26, 1823. He lost the sight of one eye irretrievably and of the other partially in early childhood. His own account of the amount of vision which remained to him, in an address at the publishers' festival in 1855, is as follows: "Time was when, after a fashion, I could read, but never with that flashing glance which instantly transfers a word, a line, a sentence, from the page to the mind. It was the perpetuation of the child's process, a letter at a time, always spelling, never reading truly. Thus for more than 20 years, with the shade upon the brow, the hand upon the cheek, the finger beneath the eye to make an artificial pupil, with beaded sweat, joining with the hot tears trickling from the weak and paining organ to blister upon the page, was my reading done." Notwithstanding this serious disability in the way of obtaining an education, he was determined to accomplish it, and we find him, accordingly, at the age of 14, a clerk in a store in Illinois, endeavoring in his leisure moments to fit for college. He attained his purpose, passed through his collegiate course with honor, though at the cost of his health, which failed under the intense application which his imperfect vision rendered necessary. At the age of 20 he entered the ministry in the Methodist Episcopal church as an itinerant. In the course of 12 years' itinerancy he occupied fields in almost every part of the union, and travelled over 200,000 miles in the performance of clerical duties, everywhere cordially received, and welcomed not less for the amiability and modesty of his manners than for his extraordinary eloquence as a preacher and lecturer. He officiated as chaplain to congress during 2 sessions, and with great acceptance. In 1853 he removed his family to New York city, where he has since resided, having left the circuit from the special inconveniences it entailed upon him, and since that time has preached as a supply to vacant churches, and followed the profession of a public lecturer, in which he has met with extraordinary success. In 1857 he published a volume of his lectures, under the title of "Rifle, Axe, and Saddle-bags," which has had quite a large sale; the lectures, though based on a solid substratum of fact, revealing high descriptive power, and a brilliant imagination.—Benjamin B. Bowen, of Massachusetts, was blind from infancy, and passed several years of his childhood as a fisher-boy. He graduated in 1839 from the Perkins institution for the blind in Boston, and has since then been busily employed as a musician, lecturer,

and author, and published in 1847 a duodecimo volume entitled the "Blind Man's Offering."—The following are the best works on the instruction of the blind: "An Account of the School for the Indigent Blind," London, 1844; "Contributions to Publications of the Society for the Diffusion of Useful Knowledge," by Charles Baker, 1842, privately reprinted. Three of these contributions are on the education of the blind. "Reports of Juries at Crystal Palace Exhibition, London, 1851, on Printing for the Blind." "National Magazine, N. Y., January to July, 1857: Sketches of Humane Institutions—The Blind;" "Reports of the Perkins Institution and Massachusetts Asylum for the Blind," 1838–1858; *Des aveugles, considérations sur leur état physique, moral et intellectuel*, par P. A. Dufau, Paris, 2d edition, enlarged; *L'institut des jeunes aveugles de Paris, son histoire et ses procédés d'enseignement*, par I. Guadet, Paris, 1850; *De la bienfaisance publique*, par Baron de Gerando, Paris, 1850; *Nouveau procédé pour représenter par des points la forme même des lettres*, par Louis Braille, Paris, 1839; *Notice historique et statistique sur l'hospice royal des Quinze Vingts*, par Battella, Paris, 1835, E. Morel; *Annales de l'éducation des sourd-muets et des aveugles*, Paris, 1844–1852; *Le bienfaiteur des sourd-muets et des aveugles*, par l'abbé Daras, 1858–1856; *Rapports sur les établissements pour les aveugles en Angleterre*, par l'abbé Carton, Brussels, 1845; *Rapports présentés au conseil général de l'asile des aveugles de Lausanne*, Lausanne, 1853; *Geschichte des Blindenunterrichts und der Blindenanstalten*, von I. W. Klein, Vienna, 1837; *Ansichten über die Erziehung, Ausbildung und Versorgung der Blinden*, von M. Dolzalek, Pesth, Hungary, 1841; *Ueber die Nothwendigkeit einer zweckmässigen Einrichtung und Verwaltung von Blindenunterrichts, Erziehungsinstituten*, etc., von M. Lachmann, Brunswick, 1848.

BLINDAGE, in fortification, any fixture for preventing the enemy from seeing what is going on in a particular spot. Such are, for instance, the fascines placed on the inner crest of a battery, and continued over the top of the embrasures; they make it more difficult, from a distance, to perceive any thing through the embrasures. More complete blindages are sometimes fixed to the embrasures, consisting of 2 stout boards, moving in slides from either side, so that the embrasure can be completely closed by them. If the line of fire is always directed to the same spot, they need not be opened out when the gun is run out, a hole being cut through them for the muzzle to pass. A movable lid closes the hole, when necessary. Other blindages are used to cover the gunners in a battery from vertical fire; they consist of plain strong timbers, one end of which is laid on the inner crest of the parapet, the other on the ground. Unless the shells are very heavy, and come down nearly in a vertical direction, they do not pass through such a blindage, but merely graze it, and go off at an angle. In trenching,

some kinds of blindages are used to protect the sappers from fire; they are movable on trucks, and pushed forward as the work advances. Against musket fire, a wall of strong boards, lined on the outside with sheet iron, supported by strong timbers, is sufficient. Against cannon fire, large square boxes, or frames, filled with earth, sandbags, or fascines, are necessary. The most common kind of sappers' blindage consists of a very large gabion, or cylinder of wicker work, filled with fascines, which is rolled before them by the workmen. Wherever the sap has to be covered in from above, the blindage is constructed by laying square balks across the top, and covering them with fascines, and finally with earth, which renders them sufficiently bomb and shot proof.

BLINDWORM (*anguis fragilis*, Linn.). The name of this animal is very badly chosen, as it is neither a worm, nor is it blind. It belongs to the class of reptiles, to the order of saurians, and to the family of scoincoids, or *lepidosauri*; this family is extremely interesting, as it seems to establish a gradation between the true saurians and the serpents, by means of the genus *anguis* and others nearly allied to it, in which the body becomes elongated and serpentineform, the ribs increase in number, and the limbs cease to appear externally, being quite rudimentary. We see a similar approach to the ophidians in some of the cyclosaurians, as in the amphisbœna, which is most properly a saurian. These intermediate forms were placed by Gray in his order of saurophidians; while Merrem, unable to draw the line between ophidians and saurians, united them into the single order *squamata*. The body and tail of the blindworm (or slowworm, as it is often called) are cylindrical and snake-like, the latter being as long as the former, and even longer; the head, triangular and rounded in front, is covered by 11 large and several smaller plates; the nostrils are lateral, each opening in the centre of the nasal plates; the tongue is free, flat, not retractile into a sheath, divided slightly at the end, but not forked like that of the serpent, its surface partly granular and partly velvety; the palate is not toothed; the jaw teeth are small, sharp, and inclined backward. The bones of the head are not movable, as in serpents, and the jaws are short and united firmly at the symphysis, so that the opening of the mouth is always the same, contrasting strongly with the great mobility and extensibility of those parts in ophidians. The genus *anguis*, and its allied genera, also approach the saurians, and differ from the serpents, in having two eyelids, moving vertically, and capable of entirely covering the eye, the lower one provided with scales. The external auditory foramen is distinct, though small and linear; there are no legs, but the rudiments of the shoulder, sternum, and pelvis, are found in the substance of the muscles, while in the snakes they are reduced to a mere vestige of a posterior extremity. The scales are 6-sided, except on the sides where they are

rhomboid; smooth, imbricated, or fish-like, and nearly of the same size above and beneath. One lung is much more developed than the other, as in serpents; the opening of the cloaca is transverse. The blindworm is found in Europe, from Russia and Sweden to the Mediterranean, and also in northern Africa; it forms now the only species of the genus *anguis*, which formerly included all the scaled reptiles with very short or no feet, and with the scales nearly alike above and below. It is gentle and inoffensive in its habits, and quite harmless; even if provoked to bite, its teeth are so small and weak as hardly to make an impression upon the human skin. It is very timid, and when taken hold of is in the habit of forcibly and stiffly contracting the body, in which state it becomes so fragile as to be broken by a slight blow, or an attempt to bend it; hence the specific name given to it by Linnæus. The glass-snake, so called, an American species of saurian, *ophisaurus*, possesses the same property, as do many other scincoids. There is no rupture of muscular fibre, but a separation of one layer from the adjoining one; in such cases, the detached portion is said to be reproduced the next year. From its smoothness it is able to penetrate into very small openings, and it delights to burrow in soft dry soil, and under decaying wood and leaves; it moves by lateral contractions, and sheds its skin, according to Bell, like the true snakes; it is ovo-viviparous, the young being brought forth alive in June or July, to the number of from 7 to 14. The general color is a brownish gray, with a silvery glance, with several parallel longitudinal rows of dark spots on the sides, and one along the middle of the back; the length is from 10 to 14 inches, of which the head is about half an inch. Its food consists of worms, insects, and small terrestrial mollusks; it is not fond of the water. In France it is called *Forêt*. The blindworm approaches the ophidians, then, in its form, manner of progression, absence of feet, number of ribs, and inequality of lung development; but it evidently belongs to the scincoid saurians by the structure of the tongue, head, and jaws, by the occurrence of movable eyelids, and by the peculiarities of the vertebral column.

BLISTER, a topical application, which, applied to the skin, produces an irritation, and raises the cuticle in the form of a vesicle filled with serous fluid. The powder of the dried cantharis, or Spanish fly, operates rapidly, with certainty, and is now invariably used for this purpose. Cantharides or Spanish flies are a species of beetle common in Spain, Italy, Sicily, and some other parts of Europe. They are found adhering to the leaves of the ash, the lilac, the willow, and other trees or shrubs. They are usually collected before sunrise, in the months of June and July, and are killed by being exposed to the vapors of vinegar, after which they are dried in a stove. These insects are employed for medicinal uses, both internally and externally, but chiefly to make the com-

mon blistering plaster. Morbid action in one part of the organism may often be relieved or removed by counter-irritation in another and a neighboring part, and on this principle the blister is applied. When the immediate effect of a blister is required, the vinegar of cantharides is the most prompt and effectual application. A piece of blotting-paper moistened with this fluid raises a blister almost immediately. It is sometimes thus applied behind the ears in toothache, or over the stomach in cases of sudden cramp. The raw surface produced in this manner affords a ready means of introducing certain medicinal substances into the system by absorption; morphine, for instance, sprinkled on this raw surface, is quickly absorbed, and patients may be thus relieved where remedies could not be otherwise employed, as in colic, cholera, &c.

BLIZARD, SIR WILLIAM, an English anatomist, born near London, 1748, died in London, Aug. 28, 1835. In 1780 he was elected surgeon of London hospital, and, a few years after, commenced lecturing on anatomy. The old corporation of surgeons elected him professor of anatomy in 1787, and when it obtained a new charter as the college of surgeons, he and Sir Everard Home jointly filled that chair. Twice he was president of the college, thrice he delivered the Hunterian oration, and when John Hunter's great collection was presented to the college by the government Mr. Blizard presented his own, consisting of 900 preserved specimens in anatomy and pathology. In 1819 he founded the Hunterian society. His health was so good that he never had a day's illness. In his 92d year his sight failed from a cataract, which being removed, he regained the use of his eyes. He was an excellent anatomist, but never was distinguished as a surgeon. He contributed little to medical literature.

BLOCH, MARKUS ELIEZER, a German naturalist of Jewish descent, born at Anspach in 1728, died Aug. 6, 1799. On arriving at manhood, almost illiterate, he thoroughly learned German and Latin, studied the natural sciences in general, and then devoted himself exclusively to natural history. His most important work is his "Natural History of Fishes." He made important additions to ichthyology.

BLOCK, the term used on board vessels to designate the case including a sheave, called by landsmen a pulley. Two or more blocks, with the necessary ropes to use them in combination, are called a tackle. Blocks or ships' pulleys are generally made of wood. The case extends beyond the sheave, and is rounded on all sides, so that ropes may not be caught between the case and the sheave, or cut by friction against sharp edges. The strap around a block is usually a piece of rope, the shaft being of iron. The wood used to make the sheave must be very tough; that used for the case must be softer, to be less injurious to the ropes with which it incidentally comes in contact.—**BLOCK MANUFACTURE**. The automatic machinery now

in use for manufacturing blocks was invented in 1801 by Mr. Brunel, who built the first set of machines for the Portsmouth navy yard, England, in 1806. The English government rewarded the inventor with \$100,000. The several machines, in the order in which they are used to finish blocks, are: 1. A straight cross-cutting saw, which divides the logs in pieces of equal length. This saw is elevated by means of a rope passing over a return pulley, to let the log advance; when let down it cuts through the wood, while a stop, properly placed, prevents its cutting the bench. 2. A circular cross-cutting saw, suspended on a parallel frame, so that the axis may be raised or lowered, pulled back or pushed forward, still remaining parallel to its original position. This axis is also free to slide lengthwise, so that the several positions of the saw are in the same plane or in parallel planes. This saw is used to cut the short logs from the first machine in pieces of the length of the blocks to be made. The saw is small in diameter, and made movable, for the purpose of cutting the wood half way from the top and from the bottom. 3. A circular ripping saw of ordinary construction divides the portions of logs into as many parallelopipeds as there are blocks to be made. 4. A boring machine, in which a block is firmly held by a screw pressing on the centre of a face against 3 points acting on the opposite face. There is a borer to bore the hole for the centre pin, and several other boring tools, set at right angles with the first, for preparing the sheave hole or holes. 5. A mortising machine, somewhat like the preceding, in which chisels with an up and down motion are substituted for the borers; this perfects the sheave holes. 6. A corner saw. This is an ordinary circular saw, with an adjustable gutter as a guide for the blocks, for cutting the 4 corners and transforming the original parallelopiped into an octagonal prism. 7. A shaping machine, in which a circular row of blocks is made to revolve with great rapidity, each block having, at the same time, a slow rotary motion on its own axis, and the position of the tools being regulated by a metal block similar to those that are to be made. This machine is enclosed in an iron cage to protect the men at work from being maimed or killed should the blocks be accidentally detached and sent through the room by centrifugal force. 8. A scoring engine, an ordinary rotary cutter of brass, with round edges, from which project 2 rounded chisels for cutting around the blocks, in the direction of the longest diameter, a groove for the reception of a metal or rope strap. The shells of the blocks are thus formed, and all that remains to be done is to polish them by hand labor. The sheaves, made of *lignum-vitæ*, are cut from the logs crosswise to the fibres, of a little more than the thickness desired. They are finished by the machines which we will now describe: 1. A crown saw, the diameter of which is equal to that of the sheaves. The flat pieces of *lignum-vitæ* are

held between 2 mandrels, and the crown saw, sliding on a hollow shaft, is pressed against the wood by moving a lever which also pushes forward a centre-bit. 2. The coaking engine, to cut around the centre hole of the sheave 3 half holes, in which a properly shaped piece of brass is inserted to form the bearing. 3. A face turning lathe, in which the sheaves are placed between flat chucks, on a mandrel which centres them perfectly. The putting together is necessarily done by handwork.

BLOOK, ALBRECHT, a German agriculturist, born March 5, 1774, at Sagan, died in Silesia, Nov. 21, 1847. He left various writings upon agricultural economy, and exerted a good influence upon the improvement of manure, the culture of potatoes, sheep breeding, and the economy and transplantation of fruits.

BLOCK HOUSE, a redoubt of wood, usually of 2 stories, the lower sunk a few feet into the ground, and the upper projecting a few feet beyond the lower on all sides. It should be built of logs 18 inches square on the ground floor, and 12 inches square in the upper story. It is loopholed, and grated hatchways should be made in the roof for the escape of smoke. Its place is at 2 diagonal angles of a picket-work, and it often enables a feeble garrison which is expecting relief to hold an important place longer than it otherwise could. It has been much employed as a defence against Indians in America, and by the French in Algeria.

BLOCK ISLAND is situated in the Atlantic ocean, midway between Montauk point, at the eastern extremity of Long Island, and Point Judith, 8 miles long, and from 2 to 5 miles wide. It belongs to the state of Rhode Island, and constitutes the township of New Shoreham. On the N. W. side is a light-house with 2 fixed lights, 58 feet above the level of the sea; lat. 41° 18' N., long. 71° 35' W.

BLOCKADE, in international law, is the closing a port of an enemy by a besieging force. The effect of it is that all communication with the place thus blockaded becomes unlawful, and the vessels of neutral nations attempting to sail into or out of the port, become liable to confiscation. This rule, which is universally admitted by civilized nations, is subject to several limitations, which are also admitted in theory, though in the application of them difficult questions often arise. 1. The blockade must be the act of a belligerent, and this imports the existence of war. The actual declaration of war may not be necessary; a blockade is sometimes the commencement of war, but it is essential that it should be by the direction of a sovereign power with hostile intent. 2. The blockading force must be such as to make it hazardous to attempt to enter the port, and any port upon which the force is not brought to bear, is not to be deemed subject to blockade. A declaration by a belligerent that a port or district of an enemy is in a state of blockade, when there is not an adequate naval force to support it, is wholly inoperative against neu-

trials. The "armed neutrality" of 1780, consisting of the northern powers of Europe, and of Holland and France, prescribed as a condition of blockade that there must be a sufficient number of vessels near the port to make an entry apparently dangerous. It was also declared that the intercourse of neutral ships with the ports of either of the belligerent parties not in a state of blockade, could not be interrupted except so far as respected warlike stores and ammunition, and that neither the vessel nor residue of the goods should be liable to seizure. To this declaration England refused assent. In 1801, the same question came up again, and the rights of neutral powers were insisted upon as before by the same governments. The rule as to what constituted blockade was at the time much more broadly maintained by England, but the result of the discussion then and since, and of the various treaties and acts of the parties to the controversy, has been the establishment, as a principle of the law of nations, that a state of blockade exists only where there is a present force sufficient to maintain it. The United States took a prominent part in the controversy, and uniformly resisted the seizure and confiscation of ship or cargo founded upon an ineffectual blockade. A more difficult question, which has never been entirely settled, is as to the right of search claimed by England to ascertain whether the destination of a vessel is to a blockaded port, or if to an enemy's port not blockaded, whether it has munitions of war on board. It is a violation of a blockade, and subjects a vessel to confiscation, although it should be able actually to get into port or sail out of it, provided the blockading force is, as above mentioned, such as to make such an attempt unsafe. 8. To make a blockade effectual against neutral vessels, notice is required. A vessel actually laden before the blockade, with a cargo purchased in good faith, is not liable to seizure for sailing after the commencement of the blockade. Notice may be implied, as where a neutral government is notified, all the subjects of such government are bound thereby. The fact of notice is a question of evidence in every case of seizure. As to vessels in the blockaded port, the notoriety of the act is sufficient notice. After knowledge of a blockade, it is not permitted to a neutral vessel to go to the very station of the blockading force under pretence of inquiring whether the blockade continues, as this would inevitably lead to evasion of it.

BLOCKLEY, on the Schuylkill river, state of Pennsylvania, was formerly a township of Philadelphia county, but now forms part of the city of Philadelphia. The Columbia railroad passes through it. Its principal objects of interest are Blockley almshouse and Blockley insane asylum. Pop. 5,916.

BLODGET, SAMUEL, a remarkable American, born in 1720 at Woburn, Mass., died at Haverhill, N. H., in 1807. Before the revolution he was judge of common pleas in New Hampshire,

and was at the siege of Louisbourg, in 1745. In 1783, having raised a valuable cargo from a vessel sunk near Plymouth, he became possessed with the idea of recovering the buried treasures of the ocean, and went to Spain and to England, where he proposed to raise the *Royal George*. But he met with little favor in either country. After his return, he commenced the manufacture of duck, in 1791. In 1793 he removed to Haverhill, N. H., and began the construction of the canal which bears his name, around the Amoskeag falls. Before it was completed, after expending large sums upon it, he fell into embarrassments, and was thrown into prison for debt. He was rigidly temperate, exposed himself freely, and intended by his mode of life to prolong it to the age of 100 years, but he died in consequence of exposure in a journey from Boston to Haverhill.

BLOIS (anc. *Bleaa*, *Blesum*), a town of France, pop. 17,749, capital of the department of Loir et Cher, on the right bank of the Loire, 105 miles S. W. of Paris. It is built on the declivity of a hill which overlooks the river. Its streets are narrow and crooked, some of them being of so rapid descent as to be inaccessible to carriages, and to have rendered the cutting of stairs in several places necessary for the accommodation of pedestrians. Taken as a whole, Blois is not devoid of a certain picturesque beauty, still enhanced by several monuments, such as the cathedral, the episcopal palace, the town-house, and above all, the castle. The houses which are situated along the bank of the river are generally handsome, while the view from those placed on the hill is magnificent. Blois, which is now but a third or fourth rate city, was early a place of importance, and during the middle ages was governed by a family of counts, who possessed also the city of Chartres. The last of them, Guy II., sold his feudal estate to Duke Louis of Orleans, brother of the unfortunate Charles VI. The castle, which existed on the N. E. side of the city, was then greatly improved, and subsequently became a favorite resort for the princes of the house of Valois. Here Louis XII. was born, and Francis I., Charles IX., Henry III., frequently resided. The eastern wing of the castle was entirely rebuilt under the first named of these kings; the northern wing, which is a gem of elegant architecture, was added by the second; in fact, the whole building, by successive additions, became one of the handsomest palaces of the time. The states-general of France were twice convened here during the reign of Henry III.: in 1576, when they repealed the edict of pacification, and the king, unable to oppose the league, declared himself its chief; and in 1588, when the same prince, fearing he might be deprived of his crown and perhaps his life, through the intrigues of the Lorraine princes, had the popular duke of Guise murdered by his body-guards in the ante-chamber of his own apartments, and the cardinal of Lorraine secretly despatched, a few hours later, in

a more secluded room. When Maria de' Medici was, in 1617, exiled from the court, she resided, probably as a prisoner, in this castle, whence, 18 months later, she escaped through a high window, which is also an object of curiosity. In 1814, on the approach of the European armies to Paris, the empress Maria Louisa and the council of regency repaired for a while to this place. Afterward the castle was entirely neglected, and even used as barracks for cavalry. During the later years of Louis Philippe's reign, this curious specimen of architecture was carefully and tastefully restored. Blois has several literary and scientific societies, a botanical garden founded by Henry IV., a public library with 19,000 volumes, a departmental college, and a diocesan seminary. It trades in wines, spirits, vinegar, staves, and liquorice, while it produces serges, hosiery and gloves, cutlery and hardware. A handsome bridge of 11 arches, built in 1717, connects the town with the suburb of St. Gervais, the cellars of which possess the singular property of turning milk into a kind of frothed cream, a delicacy which is highly appreciated by inhabitants and travellers. The city is furnished with spring water through an old Roman aqueduct, in excellent preservation. Thierry, the historian, was born here.

BLOMFIELD, CHARLES JAMES, D. D., bishop of London, born at Bury St. Edmunds, Suffolk, May 29, 1786, died in London, Aug. 5, 1857. Educated by his father, who was a schoolmaster, he was entered at Trinity college, Cambridge, and graduated, in 1808, as third wrangler and first chancellor's medallist. In 1810-'12, he edited the "Prometheus," and other plays of Æschylus. His edition of Callimachus appeared in 1824. His character as a philologist and critic rests mainly, but not entirely, on these works. He contributed largely to the *Museum Criticum*, and in a review (Oct. 1818) of Bland's "Anthology," on which he was very severe, he gave rather indifferent poetical translations from Anacreon, Meleager, and others. He edited the *Musa Cantabrigiense*, in conjunction with Rennel, and the "Posthumous Tracts" of Porson, in conjunction with Monk, afterward bishop of Gloucester. He also edited the *Adversaria Porsoni*, wrote several articles on classical subjects in reviews and other periodicals, and in 1828 compiled a Greek grammar for schools. While thus occupied as a scholar, his progress in the church was rapid. In 1810 he was appointed to the rectories of Warrington and Dunton; in 1819 Dr. Howley, then bishop of London, appointed him one of his chaplains, giving him a valuable metropolitan rectory, and the archdeaconry of Colchester; in 1824 he was made bishop of Ochester; and, in 1828, he succeeded his patron, Dr. Howley, in the see of London. He occupied that position for 28 years, and retired in Sept. 1856, on account of ill health, with a pension of £3,000 a year, and the use of the palace at Fulham for life. In parliament Bishop Blomfield took

the lead, for many years, in the discussion of ecclesiastical subjects. He firmly maintained what are called high church principles, and inculcated them not only as a legislator but in his charges to the clergy. He supported the new poor law; he manifested great zeal in improving the social condition of the laboring classes; he advocated the spread of education; and he strenuously applied himself to increasing the number of churches in his diocese. He protested, with some other bishops, against the elevation of Dr. Hampden to the see of Hereford, on the ground of his presumed heterodoxy. In church politics, however, he was generally strong rather than violent. His speeches and sermons have few claims to the character of eloquence, but are forcible and clearly expressed. Beside the income of his diocese, he enjoyed emoluments as provincial dean of Canterbury, dean of the chapels royal, and rector of Sion college. In the north-west of the metropolis there was a large piece of land, thinly inhabited, when he became bishop of London. A few years later, this was occupied as building ground, and it now contains the extensive station and works of the great western railway, with miles upon miles of first-class streets, inhabited by the wealthier classes. The ground thus covered belonged to the see of London, and the ground-rents and fines are estimated to have raised the bishop's income to £70,000 a year. Parliament has since fixed the income at £10,000 per annum. Beside his classical publications, Dr. Blomfield is author of a "Manual of Family Prayers," "Lectures on the Acts of the Apostles," and of numerous sermons and charges to his clergy.

BLOMMAERT, PHILIP, a Flemish philologist, noted for his advocacy of the use of the Flemish language, born at Ghent about 1809. He has done much for the literature of his country by an edition of the old Flemish poets of the 11th, 12th, 13th, and 14th centuries, with glossaries, notes, and emendations. He has also republished the *Nibelungentied*, translated into Dutch iambics. His best work, however, is the *Aloude geschiedenis der Belgen of Nederlanders*, in which he vindicates the claims of his country to an independent national existence and national literature. Blommaert also writes French well, and is a contributor to the *Messageur des sciences historiques*.

BLOND, JACQUES CHRISTOPHE LE, a printer of engravings in colors, born at Frankfurt-on-the-Main, in 1670, died in a hospital in Paris, in 1741. He was bred a painter, and, in 1711, went to Amsterdam, and some years after to England. He conceived the idea of an establishment to print engravings in colors, and, obtaining means, produced many copies of engravings and pictures, which of course had defects, and the experiment failed. He now devoted himself to producing the cartoons of Raphael in tapestry, but this failed also, and he soon after died.

BLOOD, in man and the higher animals, the

red liquid which circulates in the cavities of the heart, the arteries, the veins, and the capillary vessels.—I. PHYSICAL QUALITIES OF THE BLOOD. In the living body the blood is a somewhat tenacious liquid, containing an innumerable quantity of solid particles (the blood globules), which are seen only with the microscope. The color of the blood varies extremely according to the part of the circulatory system where it is observed. In the arteries the blood is more or less of a light vermilion tint in children, and of a purplish or bright cherry red in adults, and somewhat darker in old people and in pregnant women. In the veins it is of a dark red, and even of a somewhat black hue. In disease, and also in various physiological states, the blood may be very dark in the arteries, and, in other cases, very bright in the veins. The odor of the blood, which is quite peculiar, usually resembles that of the perspiration of the individual from whom the blood has been taken. The blood is transparent when seen in thin layers; opaque otherwise. The specific gravity of normal human blood averages 1.055, its physiological limits being 1.045 and 1.075. The minimum of density is in pregnant women and children, and the maximum in adult men. The capacity of the blood for heat is, according to Nasse, in an exact ratio to its density.—II. QUANTITY OF BLOOD IN THE HUMAN BODY. Of the various means employed to find out the relative amount of blood in the body, that which consists in first weighing an animal, then taking out as much of its blood as possible, and weighing the latter, is not to be relied on, as the blood never flows out entirely from the blood-vessels. However, as it is interesting to know how much blood may escape from divided bloodvessels, we will give a list of the results obtained by various experimenters. In the ewe the weight of the blood is to the weight of the body as 1 to 22 or 23; in the ox, as 1 to 12 (Herbst), or 1 to 23 or 24 (Wanner); in the cow, as 1 to 21.77; in the sheep, as 1 to 20 or 27.72; in the dog, as 1 to 10 or 12, or 21; in the horse, as 1 to 18; in the lamb, as 1 to 20 or 22; in the cat, as 1 to 22; in the rabbit, as 1 to 24 or 29; in the ass, as 1 to 23; in the fox, as 1 to 21; in the mouse, as 1 to 22.5. From these results, it has been concluded that in man the proportion of blood is from $\frac{1}{10}$ to $\frac{1}{8}$, and, therefore, for a man weighing 160 lbs., the quantity of blood is from 8 to 16 lbs. But this mode of calculation, we repeat, gives only the minimum of the quantity of blood. By another mode of calculation, in some respects similar to the preceding, with this capital difference, however, that the observations have been made on man, we find that there is much more blood in our species than was concluded from the preceding researches. Haller relates many cases of hemorrhage in which men and women have lost 9, 10, 11, 15, 18, or 22 lbs., or even 30 lbs. of blood from the nose, and 12 lbs. in one night, or 8 pints, by vomiting (*gastrorrhagia*). Burdach says that Wrisberg

has seen a woman who died from a loss of 26 lbs. of blood from the uterus, and that another woman, after decapitation, yielded 24 lbs. of blood. From facts of this kind Haller, Quenay, and Hoffmann inferred that there is about 28 lbs. of blood in the body of a man of average size. The best mode of estimating the amount of blood in man has been employed by Lehmann and Ed. Weber. They determined the weights of 2 criminals both before and after decapitation. The quantity of the blood which escaped from the body was ascertained in the following manner: water was injected into the vessels of the trunk and head, until the fluid escaping from the veins had only a pale red or yellow color; the quantity of the blood remaining in the body was then calculated, by instituting a comparison between the solid residue of this pale red aqueous fluid, and that of the blood which first escaped. By way of illustration, we subjoin the results yielded by one of the experiments. The living body of one of the criminals weighed 60,140 grammes, and the same body, after decapitation, 54,600 grammes; consequently, 5,540 grammes of blood had escaped; 28.56 grammes of this blood yielded 5.86 grammes of solid residue; 60.5 grammes of sanguineous water, collected after the injection, contained 3.724 grammes of solid substances; 6,050 grammes of the sanguineous water that returned from the veins were collected, and these contained 37.24 grammes of solid residue, which corresponds to 1,980 grammes of blood; consequently, the body contained 7,520 grammes of blood (5,540 escaping in the act of decapitation, and 1,980 remaining in the body); hence, the weight of the whole of the blood was to that of the body nearly in the ratio of 1 to 8. The other experiment yielded a precisely similar result. By this mode of calculation, which gives a nearer approximation than any other to the proportion of blood, we have not, however, the exact proportion, because blood remains in some of the capillaries. The only positive conclusion we can draw from these experiments is that there is at least 20 lbs. of blood in the body of a healthy man weighing 160 lbs. Valentin has employed another mode of calculation, which, unlike the preceding, has given, by calculation, a proportion of blood greater than that which really exists. He bleeds an animal, and determines the proportion of solid parts in the blood; then a certain quantity of water is injected into the veins, and immediately after, blood is drawn again, and its proportion of solid parts determined; and after a comparison of the two results, a calculation is made which gives the quantity of blood. In dogs, it was found that the amount of blood, compared to the weight of the body, is as 1 to 4 $\frac{1}{2}$, and in sheep, as 1 to 5. If this result be applied to man, we find, for a man weighing 160 lbs., from 32 to 36 lbs. of blood, which is most probably an over-estimate. Dr. Blake, by another method, has obtained more important results. He injects into

the veins of an animal a certain quantity of the sulphate of alumina, a salt which is not quickly destroyed in the blood, or expelled from it; then he analyzes the blood, and by the proportion of this salt found in it, he ascertains very nearly the quantity of blood in the body of the animal. The conclusion is that there is 1 lb. of blood for 8 or 9 of the animal, and, therefore, from 18 to 20 lbs. of blood in a man weighing 160 lbs. From all these facts, it results that the quantity of blood in an adult man is very likely a little above 20 lbs. There is more blood in men than in women. It is not positively determined whether a fat or a lean person has most blood; but Schultz says that there is more blood in lean oxen than in fat ones. Bérard justly remarks that it is a mistake to believe that there is proportionally more blood in newly born children than in adults.—III. COMPOSITION OF THE BLOOD. There is no fluid in the body having so complex a composition as the blood. This fact may be easily understood, as we know that through the blood passes every thing that is going to or coming from all the parts of the body, either solid or liquid. The chemical analysis of the blood is extremely difficult, and much is still to be learned as regards the composition of this mysterious fluid, as John Davy calls it. On comparing the results obtained by various experimenters who have analyzed the blood, we find a great difference between them. Gorup-Besanez has proved that these differences depend mostly on the method of analysis; for he found that when 4 samples of the same blood were analyzed by himself, according to the 4 principal methods, the results were strikingly different, as the following table will show:

	AUTHORS OF THE VARIOUS METHODS.			
	Scherer.	Bequaert and Rodier.	Hood.	Gorup-Besanez.
Water.....	796.93	796.93	796.93	796.93
Solid matters.....	203.07	203.07	203.07	203.07
Fibrin.....	1.95	1.95	1.95	1.95
Corpuscles.....	115.16	117.33	108.23	108.23
Albumen.....	58.63	63.67	50.84	70.75
Extractive matters and salts.....	27.14	19.43	47.05	27.14

Hence it is of no value to compare researches on the composition of blood in disease in men at different ages, or in different animals, made by experimenters who have employed different methods. The following table represents the composition of normal human blood, according to the researches of Lehmann. If compared with the first, it will be found that the proportion of corpuscles is notably larger in the last than in the first. This is another proof of the differences due to methods of analysis: in the last case, the corpuscles of the blood have not been deprived of their salts, and, therefore, their weight is more considerable than in cases where they lose a part of their constituents before being weighed.

1. Water.....	796.45
2. Solid residue.....	204.55
1. Fibrin.....	2.025
2. Corpuscles.....	141.110
3. Albumen.....	59.490
4. Fatty matters.....	2.015
5. Extractive matters.....	2.370
Chlorine.....	2.665
Sulphuric acid.....	.090
Phosphoric acid.....	.668
Potassium.....	1.835
Sodium.....	2.197
Oxygen.....	.585
Phosphate of lime.....	.313
Phosphate of magnesia.....	.148
	1000.000

Many other substances are found in the blood beside those above enumerated. For instance, among the fatty matters we find the saponifiable fats, which chiefly consist of oleate and margarate of soda; a phosphorized fatty matter, cholesterolin and serolin. Beside these substances, there is probably also one or many volatile fatty acids, to which the blood owes its odor. The so-called extractive substances of the blood are very different from each other, some of them being nitrogenized matters, while others are not. We will merely say that among these substances are found what Mulder calls binoxide and tritoxide of protein and sugar, urea, uric and hippuric acids, creatine, creatinine, &c. In the bloodvessels, and during life, blood consists essentially of 2 parts, which differ extremely: one is solid, the corpuscles or globules, the other is liquid, the liquor sanguinis. According to Lehmann, the corpuscles form fully one-half of the volume of the blood. Their analysis compared to that of the liquor sanguinis show that they differ much from it:

1,000 parts of blood corpuscles contain	1,000 parts of liquor sanguinis contain
Water..... 638.00	Water..... 902.90
Solid residue..... 312.00	Solid residue..... 97.10
Hæmatin (including iron)..... 16.75	Fibrin..... 4.05
Globulin and cell membrane..... 282.23	Albumen..... 73.84
Fat..... 2.81	Fat..... 1.73
Extractive matters..... 2.60	Extractive matters..... 8.94
Mineral substances..... 3.12	Mineral substances..... 8.55
1. Chlorine..... 1.650	1. Chlorine..... 3.644
2. Sulphuric acid..... 0.066	2. Sulphuric acid..... 0.115
3. Phosphoric acid..... 1.124	3. Phosphoric acid..... 0.191
4. Potassium..... 3.838	4. Potassium..... 0.823
5. Sodium..... 1.059	5. Sodium..... 3.241
6. Oxygen..... 0.667	6. Oxygen..... 0.408
7. Phosphate of lime..... 0.114	7. Phosphate of lime..... 0.311
8. Phosphate of magnesia..... 0.073	8. Phosphate of magnesia..... 0.223

Many metals are found in the blood; among them some deserve a short notice. The most important seems to be iron, which is found not only in the blood, but, according to M. Verdeil, in all the coloring matters of the body. Iron in the blood is found only in the corpuscles, combined with the coloring matter, the hæmatin. According to Lecanu, there is 7 per cent. of iron in hæmatin. If in a strong man we admit that there is 15 kilogrammes of blood (30 lbs.), the proportion of hæmatin is about 84 grammes (1 oz.), and therefore, the quantity of

iron is nearly 2.42 grammes (nearly 50 grains). M. Bérard says that out of the blood of the 28,000,000 of Frenchmen, 67,592 kilogrammes of iron might be extracted, and he adds that this justifies the words of Menghini: *Ex humano sanguine et clavos, et enses, et instrumenta omni genere cudi posse*. Sarzeau has found copper, and Denis has discovered manganese in the blood. Millon has ascertained the constant existence of these two metals, and also of lead, in the blood. These metals exist in greater quantity in the globules than in the liquor sanguinis. It is very important to know that these metals, and particularly copper, exist normally in the blood, to avoid mistakes that might be made in cases of suspected poisoning by these metals. It has been said that arsenic exists normally in blood, but this assertion has been disproved. Nickles has recently pointed out the existence of an interesting element in blood, fluorine. The blood of man differs from that of woman, as will be seen by the following comparative analyses made by Becquerel and Rodier:

	Man.	Woman.
Density of defibrinated blood.....	1060.3	1057.5
Water.....	779	791
Corpuscles.....	141.1	137.3
Albumen.....	69.4	70.5
Fibrin.....	2.9	2.9
Extractive matters and free salts.....	6.8	7.4
Fatty matters.....	1.600	1.690
Serolln.....	0.020	0.020
Phosphorized fatty matter.....	0.488	0.464
Cholesterolin.....	0.083	0.090
Animal soap.....	1.004	1.046

Beside, the same chemists have found that there is less iron in the blood of women than in that of man. The blood of children is richer in solid constituents, and especially blood corpuscles, than that of adults. It is just the reverse with the blood of old people compared to that of adults. During pregnancy the blood contains more water than in other circumstances; the quantity of albumen and of blood corpuscles is diminished. Cazeaux has justly pointed out that the so-called plethora of pregnant women is not a plethora of blood, but of water, and that it is usually very wrong to bleed women during pregnancy only because they seem to have too much blood. Among animals, the blood of omnivora and carnivora is richer in organic solid constituents than that of the herbivora. So also is that of the warm-blooded vertebrata, compared to the cold-blooded. The blood of the arteries differs from that of the veins in many points. Its corpuscles have a smaller quantity of solid constituents, especially fats, but they contain relatively more hæmatin and salts. It has more fibrin, and more water, and therefore relatively less albumen. It has also a much smaller quantity of fats, and a much greater amount of extractive matters, while its salts are diminished. For the composition of the blood of the portal and hepatic veins, we will refer the reader to the article on the LIVER. Changes in the composition of the blood are effected very quickly; during digestion, for instance, the solid constituents of the blood man-

ifestly increase, while the reverse takes place during fasting. In all the circumstances which modify the blood, it is chiefly the number and the composition of the blood corpuscles which change. The differences between different animals as to the quantity of blood corpuscles are very great; for instance, the pig has 145.5 of dry blood corpuscles, while the goat has only 86.0, out of 1,000 parts of blood. Of course this relates only to dried corpuscles, as Lehmann has found that the normal corpuscles in man form more than one-half the quantity of the blood. When it is said that the proportion of corpuscles is only $\frac{1}{1000}$ of the blood, this relates to dry corpuscles. The proportion of this most important element in the blood of man is put down at a higher or lower amount according to the means employed to separate or to dry them. In this way we may explain how Lehmann gives the proportion of 149.485 for the dry corpuscles in 1,000 parts of blood, while Becquerel and Rodier give the proportion of 141.1, Richardson 184.8, Lecanu 182.5, Prevost and Dumas 129.0, Andral and Gavarret 127.0, Popp 120.0, Nasse 116.5, and Scherer only 112.0, for the blood of man. We shall not examine here the influence of diseases on the composition of the blood; we will merely say that one of the most interesting facts, and the most constant in this respect, consists in the increase of fibrin in the blood in all the cases of inflammation, accompanied with fever. It is very remarkable that, even in very weak persons, in anæmic or hydramic people, the proportion of fibrin increases in inflammation.—IV. MICROSCOPICAL STUDY OF THE BLOOD. When the blood is examined with a microscope, many things may be found: 1, red corpuscles or discs; 2, white, or rather colorless, corpuscles; 3, molecular elements; 4, pigment; 5, crystals; 6, coagulated fibrin. We will study successively these different elements. 1. *Red corpuscles or disks*. Their discovery is due to Malpighi (in 1666), although it seems that Swammerdam had seen them a few years before. They are found in the blood of all the vertebrata. Their form varies much in animals of different classes. In man they are thick, circular, slightly biconcave discs, consisting of a colorless investing membrane, and of red or, in refracted light, yellow, viscid, fluid contents. They have no nucleus, at least in adult men. In the other mammalia the red corpuscles are more or less similar to those of man,—except, however, a few tribes (camel, dromedary, llama), in which the red corpuscles are not circular and concave, but, on the contrary, elliptic and biconvex. In birds they are also elliptic or oval, and elevated in the centre. In amphibia they are oval also, and strongly convex. We owe to the laborious researches of Gulliver the indication of the size of the red corpuscles in an immense number of animals. We will take from the table he has published only what relates to man and to the most common animals, or to those which have corpuscles of the most remarkable size. The

measurements are all made in vulgar fractions of an English inch; but for the sake of convenience, the numerator, being invariably 1, is omitted throughout, and the denominators only are printed:

MEASUREMENTS OF THE RED CORPUSCLES OF THE BLOOD.

I. MAMMALIA.		MAMMALIA (continued).	
	Long diameter.		Long diameter.
1. Man.....	3200	23. Beaver.....	3225
2. Monkeys, from 3,034 to.....	3393	24. Guinea-pig.....	3535
3. Bats, from 4,465 to 4175	4175	II. BIRDS.	
4. Mole.....	4747	1. Raven.....	1961
5. Bear (<i>Ursus Ameri-</i> <i>canus</i>).....	3693	2. Swallow.....	2170
6. Dog.....	3543	3. Cock.....	2102
7. Wolf.....	3600	4. Swan.....	1806
8. Cat.....	4404	III. REPTILES.	
9. Lion.....	4323	1. Tortoise (land).....	1253
10. Tiger.....	4206	2. Alligator.....	1334
11. Whale.....	3099	3. Lizard.....	1555
12. Pig.....	4230	IV. AMPHIBIA.	
13. Elephant.....	2745	1. Common frog.....	1103
14. Horse.....	4090	2. Common toad.....	1043
15. Ass.....	4000	3. Siren.....	430
16. Ox.....	4267	V. FISHES.	
17. Red-deer.....	4324	1. Perch.....	3099
18. Sheep.....	5300	2. Carp.....	2142
19. Goat.....	6368	3. Eel.....	1745
20. Hare.....	3580		
21. Rabbit.....	3607		
22. Mouse.....	3614		

These measures show that the size of the blood corpuscles is not at all in proportion with the size of the animal. For instance, the corpuscles of man are larger than those of the ass, the horse, the bear, the lion, the tiger, &c., which are larger animals than man. It is nevertheless remarkable that the elephant and the whale are among the animals whose blood corpuscles are the largest. In the same individual the blood disks are not all of the same size; in man their diameter varies between 1-4800th and 1-2800th of an inch, the average being 1-3200th. The red corpuscles of man, although larger than those of most of the mammalia, are so small (the 3200th part of an inch) that according to Hume, 19,880 of these corpuscles, placed side by side, would cover only a surface of a square inch. Young says that to cover such a surface 255,000 corpuscles would be necessary. Most of the micrographers now agree in admitting that the red corpuscles are composed of a thin cell or bladder, which contains a viscid liquid. The dark spot on the 2 almost flat surfaces of the corpuscles, which had given to some anatomists the idea that there was a nucleus in the centre of the disk, is now well known to be the result of a mere depression. The coloring matter of the blood, which exists only in the red corpuscles, is found there in the viscid liquid, inside of the cells or vesicles. The walls of the cells are entirely transparent and colorless. The number of red corpuscles in the body of a man is immense. To convey an idea of this number, we will merely state that, according to Stœltzing, there are from 3 to 4 or 5 millions of corpuscles in 1 cubic millimetre (the linear millimetre being about the 25th part of an inch). Vierordt and Vœlcker had already obtained analogous results. The red corpuscles are very elastic and

pliant, so much so that they may pass through bloodvessels the diameter of which is somewhat smaller than theirs. They exist in all the vertebrata except one, the lancelet (*amphioxus lanceolatus*), a very singular and little developed fish. 2. *White or colorless corpuscles*. These globules seem to have been seen for the first time by the celebrated Hewson, in the last century. However, it is only in our days that they have been well studied. They are found in all the vertebrata, including the amphibia, whose blood has no other corpuscle. They are much more globular than the red corpuscles, but not perfectly spherical; they have a granular capsule and a nucleus of several small ones. They are quite pale or colorless; they do not contain iron, and have much more fat than the red corpuscles. Their size hardly varies in the different classes of animals, so that they are in some smaller and in others larger than the red corpuscles, which vary much in size. In warm-blooded animals (man included) they average 1-8000th of an inch in diameter. An interesting fact concerning the pale corpuscles of the blood is, that they seem to be endowed with the faculty of altering their form. According to the discovery of Mr. Wharton Jones, and to the more recent researches of M. Davaine, they often show a slow protrusion from their membranous wall; after which another one forms itself in another part, while the first slowly disappears; sometimes a depression is formed instead of a protrusion. These changes have been seen even in circulating blood in living animals. These spontaneous alterations of form have been considered by some physiologists as a proof that these cells or corpuscles are microscopical animals. But apparently spontaneous movements are not sufficient signs of independent life, for, admitting that these corpuscles are animalcules, Brown-Séquard has shown that all the muscles of man or of animals, separated from the body, may have apparently spontaneous movements, so that we should have to admit that each elementary muscular fibre is a distinct animal being, if apparently spontaneous motions were a proof of the existence of an independent living organism. The number of colorless cells is very much smaller than that of the red disks. There is 1 colorless corpuscle to 300 or 400 red, according to Donders and Moleschott. The number of colorless cells increases more than that of the red disks after eating, and particularly after taking albuminous food. 3. *Molecular elements*. There is in the blood a number of exceedingly small solid particles which the French (Donné, Robin) call *globulins* (small globules). Their nature is unknown, and their form has no definite character; it may be that they are particles of coagulated fibrin. 4. *Pigment*. There is frequently, and perhaps always, in the blood of man and of the higher animals, a small quantity of black pigment under various forms. Sometimes there are only exceedingly fine granules, like those of the

skin (which are the cause of its color); in other cases there are plates of pigment, which seem chiefly to result from an aggregation of granules. The presence of cells containing black pigment is very rare in the blood. From the researches of Brown-Séquard, it seems that the quantity of pigment increases in the blood of animals when the supra-renal capsules have been extirpated. The accumulation of pigment in the blood of man, according to Planer, and in that of animals, according to Brown-Séquard, is a cause of rapid death. 5. *Crystals*. It happens, though very rarely, that without any preparation the blood corpuscles become decomposed, and their coloring matter, slightly changed in its chemical composition, forms rhomboidal or simple needle-shaped crystals. By the addition of water, of ammonia, or some other reagents, it is easy to produce many crystals in a drop of almost any blood, as has been ascertained by Virchow, Kunda, O. Funke, Reichmann, and others. M. Ch. Robin has once found, in the liver, a mass of altered blood as large as a hazel nut, entirely transformed into crystals, or, rather, containing nothing but hæmatin crystallized, the other elements of the blood having been absorbed. Dr. Brown-Séquard has pointed out the fact that, in dogs especially, after the extirpation of the supra-renal capsules, the formation of crystals in the blood is very considerable and rapid. 6. *Coagulated fibrin*. Some micrographers, especially Nasse and Virchow, call certain solid particles floating in the blood, fibrinous flakes. Henle, at first, considered these particles as shreds of epithelium, from the lining membrane of the bloodvessels. He now thinks that they are aggregations of cell membranes of destroyed blood disks. Lehmann admits that experiments of Doederlein have proved that these flakes are not composed of coagulated fibrin. Bruch has tried to show that the pretended fibrinous flakes are nothing more than epithelial cells from the skin of the observer himself, which have fallen from his face or his hands on the preparation. It is very probable that these flakes are, in a great measure, but not entirely, composed of epithelial cells, and that truly coagulated fibrin, in more or less small particles, exists in blood out of the bloodvessels, at least. Beside the morphological elements above described, we find in the blood of certain inferior animals *vibriones*, or other infusoria, and microscopical drops of fat. The assumed presence in the blood of another distinct element, i. e. the lymph or chyle corpuscle, has received a different interpretation than that previously admitted: the colorless or pale corpuscles of the blood have been proved similar to the chyle or lymph corpuscles.—V. COAGULATION OF THE BLOOD. When drawn from a vein or an artery of man, blood usually begins to coagulate in a few minutes. From the liquid state it passes at first to the condition of a soft jelly, which gradually becomes more and more consistent. The whole mass of the blood seems in the beginning to become solid,

but by the contraction of the coagulated substance the liquid is expelled from the kind of network formed by this substance, and the coagulum or clot gradually becomes smaller. The part of the blood which remains liquid is called serum. It had been imagined that the coagulation of the blood depended upon the adhesion of the blood corpuscles one to the other. But it is now well known that this coagulation is only the result of the solidification of the fibrin, which, taking place in the whole mass of the blood, contains the blood corpuscles imprisoned in the network it forms. The following table shows what changes take place in the blood during coagulation:

Liq. blood	{	Liquor sanguinis { Serum..... Fibrin.....	} Coag. blood
		Blood corpuscles.....	

The serum is the liquor sanguinis deprived of its fibrin, and no longer holding the corpuscles; the clot is the fibrin solidified, and holding the blood corpuscles. It is well proved that the coagulation of the blood, removed from the body, depends upon the coagulation of its fibrin. If blood drawn from the vessels of a living man or animal be whipped with glass rods, its fibrin becomes solidified on these rods, and the whole of it may in this manner be taken away, and then the defibrinated blood remains liquid. Nevertheless, many blood corpuscles sometimes adhere one with another, and in so doing offer a half solid mass at the bottom of the vase, but the least motion shows that there is no coagulation. When they are included in a fibrinous clot, the blood corpuscles contribute to its solidification by some slight adhesion with the fibrin, and by their being included in its network. The circumstances which influence the coagulation of the blood have been the subject of a great many investigations, among which the most important are those of Hewson, John Davy, T. Thackrah, O. Scudamore, Gulliver, and, more recently, Zimmermann, E. Brücke, and B. W. Richardson. We will examine here only what relates to the principal circumstances and assumed causes of the coagulation of the blood. 1. *Influence of temperature*. The coagulation of the blood drawn from the bloodvessels does not depend upon the loss of its temperature. It is true that the blood flowing from the vein of a man in a room, even at a summer temperature, soon loses several degrees of heat, and falls from 102° to 98°, or to a lower degree.* But this loss of a few degrees of heat cannot be the cause of the coagulation of the blood, because every day, during the winter, our blood, in the nose, in the ears, and the extremities of the limbs, loses many more de-

* The temperature of the blood is erroneously marked at 98° on the thermometers. Experiments made by John Davy and by Dr. Brown-Séquard have shown that, at least in the abdomen and in the chest, the blood, in man, is at a higher degree. According to the last-named experimenter, it is between 105° and 106°.

grees without coagulating. Beside, the blood of cold-blooded animals coagulates as well as that of the warm-blooded. Hewson has demonstrated that it is possible to freeze the blood while yet fluid, and that after being rendered fluid again by thawing, it will coagulate in the ordinary way. Hunter succeeded in freezing the blood in the ear of a living rabbit, and after some time, being thawed, it did not coagulate. A low temperature retards coagulation, but the physiologists who maintain that coagulation is prevented by a temperature near the freezing point are mistaken. Brücke says that he has seen blood coagulated at every temperature above 32° F., and even below that point, provided the blood itself was not frozen. But he has seen the blood of frogs sometimes remain fluid for 8 days, while kept in the snow. Dr. Brown-Séquard has seen the blood of frogs coagulated so quickly at a temperature of 88° or 84° F., or a little above, that hemorrhage from the section of $\frac{1}{4}$ of the ventricular mass of the heart was stopped by a clot, and life was maintained. As a general rule, however, the higher the temperature is, within certain limits, the sooner coagulation takes place; but it seems, according to Gulliver, that the coagulating power is lost by a temperature of 150° F., as blood heated to that point remains permanently fluid. The experiments of Polli, Trouseau, Leblanc, and others, seem to show that the temperature most favorable to coagulation is very nearly that of the blood itself. 2. *Influence of air.* Many physiologists have thought that the cause of the coagulation of the blood, when drawn from the bloodvessels of a living man or animal, was a peculiar action of air. Hewson believed that air had a considerable coagulating influence. In proof of this he relates the following experiments: Having laid bare the jugular vein in a living rabbit, he tied it up in 3 places, and then opened it between 2 of the ligatures and emptied that part of its blood. He next blew warm air into the empty vein and put another ligature upon it, and, letting it rest till he thought the air had acquired the same degree of heat as the blood, he then removed the intermediate ligature, and mixed the air with the blood. The air immediately made the blood fluid where it was in contact with it, as could be seen through the coats of the vein. In a quarter of an hour he opened the vein and found the blood entirely coagulated; and "as the blood," says Hewson, "could not in this time have been completely congealed by rest alone, the air was probably the cause of its coagulation." Brücke says that air blown in the manner mentioned by Hewson usually hastens coagulation, but that it is not always so. Dr. Brown-Séquard has ascertained that blood mixed with air blown into the jugular veins of dogs did not always coagulate. In some cases, 4 months after the operation the blood was found liquid in the vein between 2 ligatures. It has been remarked that when blood is placed in a cup, coagulation begins sooner in the part in

contact with air than in the interior of the liquid, but Brücke states that he has seen coagulation begin as quickly in the surface in contact with the walls of the vase. If coagulation depended upon a peculiar influence of atmospheric air, it should not take place when blood is not exposed to air. John Davy and H. Nasse have seen coagulation occur as quickly in unexposed as in exposed blood. Soudamore says even that coagulation is more rapid in a pneumatic receiver, where blood is not submitted to the action of air. From many experiments Brücke has drawn the following conclusions: 1. Air usually hastens the coagulation of the blood. 2. Air, when introduced into the heart and vessels of living turtles, does not induce coagulation. 3. The blood of frogs, when deteriorated by the action of the heart or of the other tissues of the animal, and so deprived of its free oxygen, sometimes requires atmospheric air for its coagulation. 4. Normal blood needs not the presence of air for its coagulation. Therefore, and chiefly from the last conclusion, it follows that air is not the general cause of coagulation of the blood. 5. *Influence of carbonic acid.* Soudamore admits that blood coagulates out of the body chiefly because it loses its carbonic acid, which, in this theory, is the substance which in the blood maintains fibrin in a liquid state. Sir Humphry Davy and his brother John have made decisive experiments against this view. They have found that blood exposed only to carbonic acid coagulates, though more slowly than when exposed to oxygen. Experiments of Brücke show also that the loss of carbonic acid by the blood is not necessary for its coagulation. 6. *Influence of motion and rest.* It has been said that blood coagulates out of the body because it is not in motion. If blood received in a bottle is agitated as soon as it flows from the vein, it usually seems to remain liquid, but if carefully examined, a great many particles of coagulated fibrin are found in it. When fibrin coagulates in this case, it cannot form long fibres, disposed in a kind of complicated network in the whole mass of the blood; in consequence of the agitation, it forms only small solid particles. The blood effused in the body, or kept in a bloodvessel, between 2 ligatures, in a living animal, frequently does not coagulate, although it is not in motion. It seems, therefore, that rest is not the cause of coagulation of blood, either in the body after death or out of the living body. 7. John Hunter has proposed an absurd theory of the coagulation of the blood, but as he grounds his view on interesting facts, although most of them are only partially true, we shall examine his theory. He observes: "My opinion is that it (the blood) coagulates from an impression; that is, its fluidity under such circumstances being improper, or no longer necessary, it coagulates to answer now the necessary purpose of solidity." Trying to prove this untenable theory, he says that when the vital principle of the blood is lost, it does not coagulate, which fact, he

thinks, shows that coagulation is a vital action. Animals killed by lightning or by electricity, or those which are run very hard and killed in such a state, or, what produces a still greater effect, are run to death, have not their blood coagulated, according to Hunter. Blows on the stomach killing immediately, and deaths from sudden gusts of passion, act also in the same way, and by the same cause, *i. e.* the loss of the vital principle, according to Hunter. As regards death by electricity, Scudamore and Dr. Brown-Séquard have ascertained that blood coagulates after it, but the clot is not so hard as in other cases. Gulliver has collected many facts to prove that blood may coagulate in all the circumstances mentioned by Hunter; but in most of these cases coagulation was very imperfect. It is extremely probable that blood is then altered in its composition, and chiefly, in consequence of alterations in the nervous centres and in the muscles. 6. A view recently proposed by Zimmermann is quite in opposition with that of Hunter. According to the German chemist, blood coagulates because it putrefies when it is not submitted to the chemical influence of living tissues. This view is grounded chiefly on the fact that blood kept liquid by certain salts or other substances, becomes at once or very quickly coagulated when a small quantity of putrefied matter is placed in it. This is certainly an interesting experiment, but it does not prove that coagulation depends upon putrefaction, and it seems strange that such a theory has been proposed by a man who knows that, sometimes, blood coagulates in 2 or 3 minutes after having been drawn from a bloodvessel. 7. Dr. B. W. Richardson, of London, has recently obtained the great Astley Cooper prize for a paper on the cause of the coagulation of the blood, which he attributes to the separation from the blood of a principle which he thinks always exists in circulating blood. This principle is the carbonate of ammonia. The proofs of this theory are that the author has always found this substance given out by the blood at the time it coagulates, and that when this substance is kept by the blood it remains liquid. Zimmermann has just published a paper to show: 1, that the discovery of the constant presence of ammonia in the blood belongs to himself; 2, that there are many facts which are in opposition to the view of Dr. Richardson. As the prize essay of this able physiologist is not yet published, we cannot criticize his views; but we ought to say that they seem not only improbable, but in opposition to many facts. 8. We come now to the most probable cause of the coagulation of the blood, and the only one which, in the present state of science, has no fact against it, and seems, on the contrary, to agree with all the facts. This cause is a negative one; it is the absence of a peculiar influence on the blood that, according to the theory, produces, or rather allows, coagulation. It is supposed that fibrin naturally tends to coagu-

late, and that some peculiar influence of the living tissues prevents its doing so. Sir Astley Cooper, Thackrah, and others, have been led to consider this view as probable. They found that blood kept an hour in a vein, between 2 ligatures, was still fluid, while it coagulated in from 2 to 4 minutes when abstracted from the vessel. Gulliver has seen also that blood is very slow to coagulate when confined in a vein of a living dog. Dr. Brown-Séquard has found blood still liquid, after many months, in the veins of dogs, where it had been confined after the application of 2 ligatures, and he has ascertained that this blood coagulated in a few minutes after having been abstracted from the veins. It is well known that blood effused everywhere in the body frequently remains liquid, and also that in leeches it sometimes does not coagulate, while in all these cases as soon as the liquid blood is separated from the living tissues it becomes solid. Coagulation is slow even in the bloodvessels and heart of a dead animal or man. But all these facts lead only to the conclusion that a peculiar influence of tissues and organs during life, or a little after death, has the power of preventing coagulation; they do not show what is this peculiar influence. Thackrah thought it was the vital or nervous power of the tissues. Brücke has shown that even when the heart has lost its vital properties, it keeps the blood fluid, and he has arrived at a theory, which we do not think yet fully proved. He maintains that there is no such thing as liquid fibrin in liquid normal blood, and that coagulated fibrin is the result of an atomic change in some part of the albumen of the liquor sanguinis. We will conclude our examination of the facts and theories concerning the cause of the coagulation of the blood, by saying that there is in the bloodvessels, and in the heart, and also in other tissues, some physical or chemical influence which maintains the blood fluid, and that when this influence is removed the blood coagulates. Schröder van der Kolk had imagined that coagulation of the blood was prevented by an influence of the cerebro-spinal nervous centres on the blood through the bloodvessels, and he thought he had proved the correctness of this view in finding that when he destroyed the brain and the spinal marrow, coagulation quickly took place in the blood. But Dr. Brown-Séquard has found that the destruction of the spinal marrow in the whole length of its lumbar enlargement in birds and cats, not only did not produce coagulation of the blood, but did not immediately kill the animals, many of which have lived many months after the operation. When the arteries or veins are changed in their structure, by an inflammation or other disease, they lose their power of preventing coagulation. 9. Coagulation is hastened or immediately determined by certain substances. J. Simon has seen coagulation take place on threads kept in the current of blood in veins and arteries in

living animals. Dupuy and De Blainville have seen coagulation quickly produced in blood after the injection of cerebral matter. H. Lee has seen the same thing after injection of pus, and Virchow and others, after injection of mercury and other substances. Iodine and iodides and galvanic currents hasten coagulation, and have been employed, on account of their influence on blood, for the cure of aneurisms. 10. Coagulation is retarded or entirely prevented by certain substances. Neutral salts act in this way, as well as many medicines and poisons, such as opium, belladonna, aconite, hyoscyamus, digitalis, strong infusions of tea and coffee, &c. Gulliver has kept horses' blood liquid for 57 weeks by the influence of nitre, and this blood rapidly coagulated when it was diluted with water. This fact explains how, in some cases, blood does not coagulate in the body after death. So it is particularly after drowning, or death by irrespirable gases, or poisoning by cyanhydric acid, &c. But if the following fact, mentioned by Polli, be true, it is possible that, in some of those cases where blood has been found fluid in the veins long after death, the coagulation would have been observed taking place at a later period if the blood had been kept long enough. Polli says he has seen blood remain liquid a fortnight and then coagulate spontaneously, and he thinks that blood will always be found to coagulate if kept long enough. 11. The surface of a clot of blood very often presents a more or less considerable layer of coagulated fibrin nearly free from red corpuscles, and consequently without color: this layer is what is called the buffy coat. We owe to Gulliver the explanation of the production of this coat. The red corpuscles have a density superior to that of the liquor sanguinis, and when the blood is at rest they naturally sink until an obstacle prevents their doing so. As long as coagulation has not begun, the globules move toward the bottom of the vase; and when fibrin forms the solid shreds which constitute the coagulum, the upper layer of the mass of the blood no more contains red corpuscles, and therefore is colorless. Now, in inflammation the sinking power of the red globules is increased, so that the colorless layer of coagulated fibrin is thicker than in other cases, and thus it is that the buffy coat and its thickness are sometimes a good indication of the existence and even of the degree of an inflammation. But there are many circumstances beside inflammation and without it, which lead to the production of the buffy coat. Andral has shown that when the proportion of red corpuscles is diminished in the blood, the buff exists frequently on the top of a small clot. This is the case in chlorosis, in anæmia, &c. Another circumstance which favors the formation of a colorless layer of coagulated fibrin, is the aggregation of the red corpuscles in columns or piles (like piles of coins), which renders them heavier and increases the speed of

their sinking. In inflammation, as shown by H. Nasse, Wharton Jones, &c., the red corpuscles have an increased tendency to aggregate, and this explains why the buffy coat is so frequently thick in inflammation. Lehmann has shown, however, that all the circumstances which have been considered as favorable to the sinking of the red corpuscles, and to the formation of the buffy coat, are insufficient to explain the facts in all cases, and that there are some unknown causes of production of the buff. 12. The coagulation of blood does not generate heat, as had been imagined. The experiments of J. Davy, and especially those of Denis, afford convincing proofs in this respect.—VI. FORMATION OF THE BLOOD. We shall not examine here the first formation of this liquid, that is, its production in embryos; this subject belongs to the article EMBRYOLOGY. We shall only inquire into the sources of the blood, and the mode of production of its principal materials, in completely developed animals. Three sources exist for the formation of the various materials composing the blood: 1, the body; 2, the food; 3, the respiration. That the body itself is a source of blood we cannot doubt. If, as Piorry has shown, we take blood from a dog, in such quantity that we cannot abstract 1 or 2 ounces more without killing the animal, we find the next day, although the dog has not been fed, that we may take out again 10 or 12 ounces of blood without causing death. It follows from this fact that a formation of blood has occurred, and, as there has been no food taken, the blood formed must come from the body. As regards the share of respiration in the formation of blood, we shall only remark here that it gives certain gases, especially oxygen. For more details on the influence of oxygen and other gases on the blood, see RESPIRATION. The formation of blood is very rapid when abundant and very nutritive food is taken, as is proved by the following facts, most of which are related by Haller. For several years a young girl was bled sometimes every day, at other times every other day; a hysterical woman was bled 1,020 times in 19 years; another individual had a loss of 1,000 lbs. of blood in a year; in another, 5 lbs. of blood were lost every day for 62 days; a young man had a loss of 75 lbs. of blood in 10 days; an Italian physician, Dr. Cavalli, relates that a woman was bled 8,500 times in 28 years! It seems from these facts, and from many others, that the power of formation of blood increases with the frequency of the losses of this liquid, and with the habit of repairing these losses. The food, before being able to repair the losses of blood or to give to this liquid the materials which it furnishes to the tissues, must be modified by digestion, and brought to the blood by absorption, either directly or by the lymphatic vessels. The part of the food which is absorbed by these last vessels, is called chyle. The transformation of lymph and chyle into blood is an act of much greater magnitude than had been supposed till

a few years ago. According to recent researches of Bidder and Schmidt, there is a quantity of about 28.6 lbs. of lymph and chyle poured into the blood of a man every day, i. e. from $\frac{1}{3}$ to $\frac{1}{2}$ of the weight of the body. Of this amount 6.6 lbs. are true chyle, and 22 lbs. are true lymph. In these two liquids elements similar to those of the blood are found: i. e. water, salts, fats, albumen, fibrin, and corpuscles. This shows that the work of formation of blood from chyle, as well as lymph, is not very considerable; in other words, the transformation of food into blood is already much advanced in the bowels and in the lymphatic vessels. One of the most interesting questions relative to the formation of the blood is that of the origin of the blood corpuscles. In the first place, as regards the colorless corpuscles of the blood, there is now no doubt that they are entirely similar to the lymph corpuscles, and that they have been brought into the blood with the lymph and chyle. As regards their formation we will refer to the article LYMPH. The next question is, how and where are the red corpuscles formed? Most of the physiologists now seem to agree on this point, that the red corpuscles are a mere transformation of the smaller lymph or chyle corpuscles. According to Kölliker, the most probable view is, that these small colorless corpuscles are converted into true red disks by the disappearance of their nuclei, by the absorption of the red coloring matter, and by the flattening of the cell-walls, which take the discoid biconcave form. According to Gerlach, the blood disks are formed in the interior of the large colorless cells. As to the place where the blood disks are formed, most of the physiologists think it is in the liver, and some that it is in the spleen. The source of the albumen of the blood is chiefly the food, and it is brought into the circulation by direct absorption by the veins in the stomach and bowels, and only partly by the chyle. The origin of the fibrin of the blood is not exclusively the food, as some physiologists maintain. It must come from the tissues or from the albuminous matters of the blood, for Dr. Brown-Séquard has proved that when blood, deprived of fibrin, is injected into the arteries of a limb, the veins give out blood containing fibrin, and in greater quantity if the limb is galvanized. Beside, it is known that in animals deprived of food, or bled many times, the quantity of fibrin increases in the blood. There must be a very considerable formation of fibrin in the blood, as, according to the remarks of Dr. Brown-Séquard, there are many pounds of this substance transformed into other substances, in the course of a day, in the liver and the kidneys. The origin of the fats of the blood, as Persoz, Liebig, Bidder, and Schmidt, &c., have well proved, is not exclusively from the fats of the food. But it remains to be shown from what principles of the food or of the blood, and in which organ, the formation of fat takes place. Many of the extractive substances of

the blood are either formed in it or in the tissues. As to the salts and the metals of the blood, they come from the food. The sugar of the blood comes in a great measure from the food, and from a transformation of certain substances by the liver.—VII. USES OF THE BLOOD. Nutrition—that is, the act by which the various tissues grow or are maintained alive, and by which they excrete materials which are no longer useful to their organization and vital properties—is the result of the interchange between the blood and the tissues. We will now examine how far some elements of the blood may influence the vital properties of the tissues, to show that these properties depend upon some materials furnished by the blood. Dr. Brown-Séquard has discovered that all the nervous and contractile tissues in the brain, the spinal cord, the motor and sensitive nerves, the muscles of animal or organic life, the iris, the skin, &c., may, after having lost their vital properties, their life, recover these properties again, and in some respects be resuscitated, when blood containing a great quantity of oxygen is injected into the arteries of all these parts. Still more, he has found that, when cadaveric or *post-mortem* rigidity exists in limbs of animals or men, oxygenated blood had the power of restoring local life in these parts. These experiments he has made on many animals, and on the arms of 2 decapitated men, in one 18, in the other 14 hours after decapitation. He has ascertained that black blood (which contains but a small amount of oxygen) has no power of regenerating the vital properties of the various tissues, and that the more blood corpuscles and oxygen there were in the blood employed, the quicker and the more powerful was its regenerating influence. Blood deprived of fibrin acted as well as blood containing fibrin, showing that fibrin is not a necessary material for the production of the vital properties of the various tissues. In one case he has maintained local life for 41 hours in a limb separated from the body of an animal. For other facts relating to the uses of the blood, see NUTRITION, SECRETION, and TRANSFUSION.

BLOOD, COLONEL THOMAS, a noted bravo and desperado of the reign of Charles II., born in Ireland, about 1628, died in London, Aug. 24, 1680. He was a hanger-on and dependant of the profligate Villiers, duke of Buckingham, was used by him to punish political and social adversaries, whom his own rank did not permit him to meet in the field, and by his means was enabled to avoid punishment for crimes which would have sent any man less powerfully befriended to the gallows. His most daring attempts were his kidnapping, with the intent to murder, the venerable duke of Ormond, in which he would inevitably have succeeded, had he been content to take the life of that nobleman with either poniard or pistol. Nothing, however, would suit him but he must hang him on the common gibbet at Tyburn, whither, having got him on horseback behind one of his companions, he

was carrying him across the fields, when he was rescued by some of his servants, who came up at speed, barely in time to save their master. A few days after the perpetration of this outrage, Ossory, the son of the duke of Ormond, seeing Buckingham standing by the side of the king, could not refrain in his anger from thus addressing him: "My lord," he said, "I know well that you are at the bottom of this late attempt upon my father; but I give you warning, if by any means he come to a violent end, I shall not be at a loss to know the author. I shall consider you as the assassin. I shall treat you as such, and wherever I meet you I shall pistol you, though you stood behind the king's chair; and I tell you this in his majesty's presence, that you may be sure I shall keep my word." His next attempt, of yet more extraordinary audacity, was to steal the regalia, or crown jewels, from the tower of London, in which he was all but successful, only failing to accomplish his end owing to the desperate resistance of Mr. Edwards, the custodian of the jewels, an old gentleman of courage superior to his years, who, although bound and wounded, struggled so hard, and made such an outcry, that the rescue came in time, and Blood was seized with the crown under his cloak, which, prisoner as he was, he would not yield without a struggle. Charles not only pardoned this infamous malefactor, and, in addition to his own, procured for him the duke of Ormond's pardon, but actually gave him an estate of £500 a year in Ireland, and encouraged his attendance as a sort of favorite at court, where he was constantly employed in advocating the claims of suitors by his personal influence with the king. At the same time old Edwards, who had risked his life in the defence of the regalia, was neglected and forgotten.

BLOOD, FOUNTAIN OF, the name given to a stream of fluid resembling blood, issuing from the roof of a cave in the town of Virtud, in the southern part of the department of Choluteca, Honduras. It drops steadily on the floor of the cave, forming pools of coagulated matter, and tinged with a red color a brook which flows by. This fluid has not only the color, but also the taste and smell of blood, and when exposed to the air for a short time, it corrupts and emits an offensive odor. No good analysis of it has ever been made, but it is probable that it owes its peculiar properties to the presence of immense numbers of minute infusoria.

BLOOD MONEY, money paid to the next of kin of a man who met with his death at the hands of another, accidentally or with premeditation. The Greeks called it *roun*, the Latins *pæna*, the Franks, Allemanni, and Scandinavians *manbota*, *wehrgeld*, or *wyrgilt*, the British Celts named it *saurhard*, and the Irish Celts *eric*. The institution still flourishes in many communities of Asia and Africa. In English criminal law the term blood money was also applied to rewards paid to informers against highway robbers, thieves, burglars, and utterers of false

coin or forged bank notes. Laws of this character were passed between 1692 and 1742. In 1813 the total amount paid in this way was £18,000. By this time a number of persons made a living out of these laws by entrapping unwary and foolish people into the commission of the crime of forging or uttering false coin, and then informing against them. As early as 1756, one McDaniel had brought to the scaffold and earned the blood money of no less than 70 victims. Parliament, recognizing the abuses this system had engendered, repealed all the laws relating thereto, except in relation to the forgers of bank bills, in which case the informer can still get his pecuniary reward.

BLOOD STAINS. Various medico-legal questions are often to be solved concerning the nature of stains resembling blood stains, found on clothes, on pieces of furniture, on weapons, &c. We will examine here only the principal of these questions, which are included in the following: 1. Is it possible, and by what means, to decide that a stain is produced by blood or not? 2. Is it possible, and by what means, to ascertain that the blood of a stain comes from a man or from an animal? 3. Is it possible to find out whether the blood of a stain comes from one man or another?—I. It is usually easy to ascertain whether a stain is due to blood or not. But such an examination must be made by men who are thoroughly acquainted with chemistry and microscopy. Unfortunately, in England, and perhaps also in this country, policemen are sometimes charged by coroners to decide as to the nature of a stain. Ignorant men may easily be deceived by taking notice only of the color, which physical character cannot be sufficient for the detection of blood, as there are many dyes which resemble that fluid in this respect. When the life, the liberty, and the honor of men are at stake, much more care should be taken. Two series of means may be employed for the detection of blood in a stain. One of them consists in testing the stain by some reagents—this is the chemical test; the other consists in the examination of the stain with the microscope—this is the physical test. This last means is more decisive than the first, but a complete medico-legal examination must comprise both of them. It would be out of place here to give long details on the chemical tests of blood; we will merely mention some of the principal facts. If there is a stain of suspected blood on a piece of cloth, or any other stuff, the stained part must be cut off, and dipped into a small quantity of distilled water. In the course of a few hours the coloring matter, if it is that of blood, will detach itself and reach the bottom of the vase, the supernatant fluid remaining tolerably clear or slightly rose-colored. The fibrin will remain attached to the stuff as a grayish or rosy-white substance. If the liquid be boiled, the color will be destroyed and the albumen coagulated; in its inferior parts, where the coloring matter has accumulated, the liquid will become grayish or green-

ish, while the upper portion will acquire a slightly yellow tint. The red soluble dyes, or stains from the juices of fruits, are very rarely coagulated, and they do not lose their color, when, after having been dissolved in water, the solution is boiled. Beside, they are rendered crimson or green, passing sometimes to violet, when treated with ammonia, while this reagent, unless it be used in great quantity and concentrated, does not change the color of blood or of a watery solution of a blood-stain. When ammonia is powerful enough to alter the color of blood, it gives it a brownish tint, instead of the crimson, green, or violet colors that it gives to dyes. If the solution of a blood stain has coagulated by boiling, we find that potash dissolves the coagulum, renders it limpid and green by reflection, and pink by refraction. If chlorohydric acid is then added, the transparency disappears, but it returns if another quantity of potash is added. These reactions belong only to blood. The nature of the smallest stain, able only to furnish one drop of a solution, may be found out by the above-mentioned chemical means. In such circumstances, according to M. Boutigny, the drop should be thrown into a silver spoon at a very high degree of temperature. The liquid in this, as in any other case, *i. e.* with any kind of liquid whatever, being suddenly exposed to an extreme heat, instead of evaporating takes the shape of a sphere, and then experiments may easily be tried, and the action of ammonia, of potash, of chlorohydric acid, etc., may rapidly be ascertained.—The microscope usually shows quicker and more positively than chemical reagents if a stain is due to blood. With the help of this instrument the red and the colorless corpuscles may be seen easily. (See the article BLOOD.) There is nothing to be found with the microscope in the stains of the various dyes which can in any way be mistaken for the blood corpuscles. The presence of these well-characterized particles in a stain is, therefore, an incontestable proof that it contains blood. But the blood corpuscles may have become so much altered that it is very difficult to ascertain their presence, at least without the help of chemical reagents. The microscope, unaided by chemistry, therefore, may fail to detect blood in old stains. However, it is usually easy to find the red corpuscles, and they have been detected in stains of many years' duration. Dr. Taylor says that he has obtained clear evidence of their existence in a small quantity of blood, which had been kept in a dry state for 8 years. Dr. Ch. Robin has discovered the presence of red corpuscles on clothes in stains of 8 or 10 years' duration. Prof. J. Wyman says that in blood which had been allowed to dry in masses he has failed to find the red corpuscles, while, on the contrary, the white or colorless corpuscles may be softened out after they have been dried for months, and their characteristic marks readily obtained. He found it easy to detect them in blood which

had been dried for 6 months. Dr. Ch. Robin has given a drawing representing what the microscope showed in a solution of a stain found on the blade of a knife. No red corpuscle is figured, while, on the contrary, many colorless are. But we think that the mere fact of the presence of colorless corpuscles, with nearly the same appearance that they have in fresh blood, is not sufficient to prove that a stain is due to blood, because the chyle and lymph corpuscles, those of pus and even some of those of mucus, are either very or entirely similar to the white corpuscles of the blood. When clothes have been washed after having been stained with blood, almost all, if not all, the corpuscles are removed, or so much altered that their presence cannot be ascertained positively. But chemistry may then render it very probable that there has been blood on such clothes, by detecting in them iron and a coagulable organic matter. If blood stains are on the blade of a knife, the microscope and chemical reagents may enable us to distinguish them from rust. Usually, when the knife is heated, a blood stain may be peeled off, leaving a neat metallic surface where it was; it is not so with rust, which remains almost unaltered. Beside, when the stain is washed, it leaves a much smoother surface if it is due to blood than if it comes from rust. Usually in this last case there is a peculiarly dentated surface, the presence of which leaves no possibility of a mistake. In a case where M. Daubrawa was requested to ascertain the existence of blood stains on a knife which was suspected to have been used in the commission of a murder, this instrument, having lain a long time in a damp place, was rusted, but there were certain bright spots free from rust, and surrounded by it. On heating the point of the blade these spots scaled off, while the rust remained adherent, and on immersing the knife in diluted hydrochloric acid, the bright spots remained unaltered while the rust readily dissolved. Some of the reagents which serve to detect blood were then employed, and it was found that the bright spots were really covered with blood, which had prevented the formation of rust. In another case in which a man had been accused of murder, an examination of a knife covered with red spots, and found concealed behind a piece of furniture, proved that the stains were due to rust produced by lemon juice. Blood may be detected even on a stone. Prof. Laessaigne has ascertained its presence a full month after it had been shed on a pavement of soft freestone, which had been exposed to the action of air, of rain, and of the sun. The color of the stain had passed to a dirty green, with a reddish tint hardly discernible. In a place where stains of blood are suspected to exist, and where none are found by daylight, the search for the red spots must be made by artificial light. In a case where Ollivier d'Angers had vainly tried by daylight to find stains of blood on the floor and on the paper hangings of a room,

he detected many by candle-light. It is sometimes necessary to throw a great deal of light on the surface examined, and to employ a magnifying lens to find out the very minute stains of blood on clothes as well as on furniture, &c.; but a careful examination cannot fail to be successful.—II. When it is decided that a red stain is due to blood, it remains to be ascertained if the blood is that of a man or of an animal. Chemistry in such an examination is of almost no avail. The physical character of the red corpuscles of the blood is almost the only guide. It has been said, however, that some reagents may develop in the blood such a smell that it is easy to determine not only from what animal the blood comes, but also whether it is that of a man or of a woman. When sulphuric acid is added to the blood of an animal or of a man, it gives rise to a smell which has been said to be just the same as that of the individual that has furnished the blood. The chemist (Barruel) who discovered this fact, was almost always able to make out by this means what was the source of blood sent to him; so were M. Colombat and some other physicians, but a great many others have vainly tried to detect the source of the blood they examined. Decisive experiments have been performed by the nephew of the discoverer, by Dr. A. Tardieu and M. Chevallier; their conclusions are that the same blood may be considered as belonging to different animals, while the blood of different animals may be admitted to come from the same one. Beside, the blood of man may be mistaken for that of animals, and *vice versa*. It seems, therefore, that only a few men have the organ of smell sensitive enough to detect differences in the odor of the blood of different animals. In man and all the mammalia (except the camel tribe), the red corpuscles are circular, flat disks, while in fishes, reptiles, birds, and camels, they are oval. This difference is at once sufficient to distinguish the blood of all these animals from that of man. In a case mentioned by Taylor, it was suggested in the defence that the blood stains on the clothes of the prisoner were due to his having killed some chickens. The shape of the globules negatived this part of the defence. In another case the blood was alleged to be that of a fish; this was also disproved by the shape of the corpuscles. Dr. H. Bennett, of Edinburgh, states, that a patient having bronchitis had put bird's blood in her sputa, and that, after the microscope had showed this fact, she was greatly surprised that it had been discovered, and confessed that she had done it for the purpose of imposition. On looking at the table of the dimensions of the blood corpuscles (which we have taken from Gulliver in the article on BLOOD), it will be found that the blood disks of man are larger than those of all the domestic animals. To cover the extent of a linear inch with the red corpuscles of a man, 8,200 would be necessary, while it would require 4,404 of the red cor-

puscles of a cat, and 6,866 of those of a goat to cover the same extent. O. Schmidt thinks he has shown that by accurate measurements of the red corpuscles, the blood of all the common mammalia can be individually detected and also distinguished from that of man. He proposes to avoid the errors arising from a greater or a slighter evaporation, by drying the blood corpuscles before measuring them. He gives the following table, which may prove very useful to the medical jurist:

DIAMETER OF BLOOD CORPUSCLES IN MILLIMETERS.

	Mean.	Minimum.	Maximum.
1. Man.....	0.0077.....	0.0074.....	0.0080.....
2. Dog.....	0.0070.....	0.0066.....	0.0074.....
3. Rabbit.....	0.0065.....	0.0060.....	0.0070.....
4. Rat.....	0.0064.....	0.0060.....	0.0068.....
5. Pig.....	0.0063.....	0.0060.....	0.0065.....
6. Mouse.....	0.0061.....	0.0058.....	0.0065.....
7. Ox.....	0.0058.....	0.0054.....	0.0063.....
8. Cat.....	0.0056.....	0.0053.....	0.0060.....
9. Horse.....	0.0057.....	0.0053.....	0.0060.....
10. Sheep.....	0.0044.....	0.0040.....	0.0048.....

Dr. Taylor says he has tried the method of Schmidt and has not found it practically available, and he declares that the question of the distinction between the blood of man and that of certain animals is unsolved. He adds that when blood has been dried on clothing, we cannot with certainty and accuracy distinguish that of an ordinary domestic animal from that of man. Usually, however, in fresh blood, the measurement of the red corpuscles will decide the question; and, in old stains, when the blood corpuscles have changed their form and become jagged or stellate, it will often occur that several substances will give them their normal shape and render possible the determination of their source. But we must say, with Dr. Taylor, that the evidence here is based on conjecture only, and should therefore be received with the greatest caution. Not only can the red corpuscles be altered in their size and shape, but they may be decomposed and give origin to crystals which are so similar, whether coming from the blood of certain animals or that of man, that no distinction is possible. Fortunately there are almost always at least a few undecomposed red corpuscles among the crystals.—III. It is absolutely impossible to distinguish the blood of one man from that of another by means of the comparison of the red corpuscles. There may be more difference between the corpuscles of 2 samples of blood from the same man than between those of 2 men. A great many external causes may produce variations in the size of the red globules; and, beside the proportion of water, of certain gases, or salts in the blood has a great influence on the shape and also on the dimensions of the red corpuscles. All who know the facts advanced in favor of or against the theory of Hæmle, concerning the causes of the difference of color of the arterial and venous blood (see RESPIRATION), are aware of the changes of the blood corpuscles due to oxygen, carbonic acid, &c. The smell of the blood of women might by some persons be distinguished from that of the blood of men, but we cannot place any positive reliance on the senses

of anybody for such a distinction, and we know that even the chemist who discovered the influence of sulphuric acid in increasing the odor of blood, Barruel, once failed to distinguish the blood of a man from that of a woman; he mistook one for the other. Chemistry also is of no avail for the discrimination of the blood of one man from that of another.—From the facts related in this article we conclude: 1. That it is usually very easy and perhaps always possible to detect even the smallest quantity of blood in suspected stains. 2. That stains of the blood of fishes, reptiles, or birds, may easily be distinguished from stains of human blood. 3. That stains of the blood of the animals nearest to man, when fresh, may easily be distinguished from those of human blood. 4. That it is very difficult, and sometimes almost impossible, to distinguish the blood of certain animals from that of man in old stains. 5. That it is impossible, either by chemical means or by the microscope, to distinguish the blood of one man from that of another.

BLOODHOUND (*canis familiaris sagax*, Linn.), a hound trained and kept for the pursuit of men, whether thieves, enemies, or fugitives. A very erroneous idea usually prevails concerning the bloodhound, partly originating from his name, as if he were called bloodhound from being cruel and bloody in his nature, and partly from a misconception of his powers, as if he were either a hound that will hunt only man, or the only hound that will hunt man. Whereas the bloodhound, like all pure hounds, is a particularly bland, mild, and loving dog, and will hunt any other game, to which he is trained or entered, as readily or more readily than he will man; while all other dogs may be trained more or less perfectly to follow and acknowledge the scent of a man, as must be evident to every one who has ever seen a lost dog, when he comes upon the scent of his master's foot, which he at once follows inch by inch, until he has found him. Any hound naturally pursues, in the beginning, whatever is his natural or accustomed prey; and the distinction of foxhound, staghound, harrier, boarhound, or the like, is a mere matter of education and training, not of natural instinct. The staghound would hunt the fox, the foxhound the stag or the hare, and the harrier either stag or fox, even more eagerly than its own peculiar game, since both stag and fox have a stronger scent than the hare. The perfection of the hounds, of any kind, is when they are so thoroughly broken that, in direct disobedience to their natural instincts, they will hunt, if harriers, a hare, through a warren of rabbits—the scent and habits of the 2 animals being almost identical; if foxhounds, a fox, through a preserve full of hares, or a park full of fallow deer, without for an instant losing the scent of the animal of which they are in pursuit, or casting a single look at the other game, which are in motion all around them. The bloodhound, originally, was the choicest hound in existence, of the old Talbot or southern breed.

He was a large, tall, square-headed, slow hound, with long pendulous ears, heavy drooping lips and jaw, and a dewlap like that of a bull. He was broad-chested, crook-legged, with his elbows turned out, deep-tongued, and, in pursuit, extremely slow; so much so that the slowest horse could always keep him in sight, and in a long chase an active pedestrian could keep him in hearing. His powers of scenting, however, were so extraordinary, that not only would he follow the deer or other animal of which he was in pursuit, through herd after herd of the same animals, but he would recognize its trail on the ground as long as 12 or 14 hours after the creature had passed by; and that if it were lost on one day, and he were put on its fresh track again on the following morning, he would at once own it as the same, and follow it so long as it ran on solid soil. For 2 reasons this animal was called the bloodhound. First, if the animal he pursues be wounded and its blood spilled on the earth, he will follow the track of the blood, as he will that of the foot. Secondly, if fresh blood of some other animal be spilled across the track of the animal pursued, the hound will stop confused on the fresh blood, and will acknowledge the old scent no longer. On the frontiers of England and Scotland, probably first, and certainly longest and most systematically, were kept and trained bloodhounds, called in the northern patois of the borders, sleuth-hounds; they being nothing more than the large Talbot, trained exclusively to follow men. The cattle-stealing outlaws and marauders of Cumberland and Liddesdale, who considered their pursuit the only manly occupation in time of peace, were the especial game of the sleuth-hound; and there were particular authorized solemnities, before the union of the 2 kingdoms, which, being performed, it was lawful to cross the border from England to Scotland, or *vice versa*, without interruption to the peace of the realms, and rescue the booty with high hand, provided the bloodhounds were hunting "on the hot foot" when the frontier line was passed. Within the memory of Sir Walter Scott, men were alive in Ickdale and Liddesdale, who remembered bloodhounds being kept for the detection of sheep-stealers. The breed is still maintained in a few large deer parks in the north of England, for following up outlying bucks, which they will single out of the herd, and never leave until they are taken. They are, in color, usually tawny, not brindled, with black muzzles; or black and tan, the latter being called St. Hubert's breed, and esteemed the hardiest. The animal known as the Cuba bloodhound, is not a bloodhound, or a hound at all, but is a descendant of the old Biscayan mastiff, which was trained, not so much to hunt, as to fight; and which struck more terror into the soft southern Indians than the war-horses and mail-clad riders of the Spanish cavaliers. It has some scenting powers, as all dogs, even the bulldog, have, but it is as inferior in these to the true bloodhound, as it is superior to him in

blood-thirstiness and cruel, indiscriminate pugnacity. It has no utility except as a man-hunter.

BLOODLETTING is technically termed phlebotomy, from the Greek φλέψ, a vein, and *repsō*, to cut, to denote the act of opening a vein for letting blood, as a means of relief in certain cases of diseased action in the organism. The surgical operation of bloodletting is very simple in itself, but requires some knowledge to do it properly without risk or danger. Bloodletting is usually performed at the bend of the arm, because the superficial veins are large in that locality, and more distinctly seen than anywhere else. Before using the lancet the surgeon ascertains the position of the artery at the bend of the arm; it is commonly felt pulsating nearly under the largest vein. This vein must be avoided, because the danger of wounding the artery, by passing the lancet too deeply, is thereby avoided. The vein next in size, but not so near the artery, is therefore selected. A bandage about 2 fingers in breadth and a yard in length is then tied firmly round the arm, about an inch above the place where the opening is to be made. This will cause the veins to rise; but care must be taken not to tie the bandage so tightly that the pulse cannot be felt at the wrist. The surgeon then grasps the elbow with his left hand, placing his thumb firmly upon the vein, a little below the place where he intends making the puncture, to keep it in its place, and prevent it from rolling under the skin during the operation. The lancet is then passed obliquely into the vein. The flow of blood is facilitated by keeping the hand and wrist in motion. When a sufficient quantity has been discharged, the bandage is removed from the arm above the puncture; the surgeon puts his thumb upon the wound to stop the bleeding, and with the other hand washes the blood from the arm. The lips of the wound are then placed in contact; a small compress of old linen is placed over it, and secured by a bandage passed round the elbow in the form of the figure 8. The crossing of the bandage should be immediately over the compress. If blood should make its way through the linen some time after the arm has been bound up, the bandage must be made more tight, and slackened somewhat after the bleeding has ceased. The bandage is retained 2 or 3 days, and the arm is kept in a sling, for rest, at least 24 hours. In fat people it is sometimes very difficult, or perhaps impossible, to render the superficial veins of the arm visible; in such cases blood may be drawn from the ankle. A bandage is applied round the leg about 2 inches above the ankle; the foot is immersed some time in warm water, to make the veins rise; the largest vein either on the inside or the outside of the ankle is then opened, and the foot is again plunged into warm water, or the blood would not run freely. Bleeding at the wrist is also resorted to, when the veins at the bend of the arm are too small or otherwise difficult

to operate upon; the cephalic vein of the thumb or the back and outer side of the wrist is selected in that case. Bleeding at the neck is also practised at times. The operation is performed on the external jugular vein, at either side of the neck. The vein runs in an oblique direction, and the operation is performed at the lower part of the neck, because the vein is there more prominent; and, higher up, it is surrounded by a network of nerves, which it would be dangerous to wound. In addition to the usual materials, a card is required in this operation to form a channel for the blood. Two or 3 pledgets are placed, one upon the other, on the jugular vein, at its lowest part, just above the collar-bone. These are maintained in place by a ligature, the centre of which is placed directly upon them, while the 2 ends are carried down, the one forward, the other backward, to the opposite armpit, where they are tied in a single bow. The vein then swells, and should be fixed by 2 fingers of the left hand. Beneath the skin of the neck, and lying upon the jugular vein, there is a muscle as thin as paper, the *platysma myoides*, the fibres of which run in an oblique direction, from the collar-bone to the border of the lower jaw, which is the direction of the vein itself; the incision is made at a right angle with respect to the direction of these fibres, that they may contract and form no obstacle to the issue of the blood. The incision is also made rather wide, to insure a free issue from the vein. The blood trickles down, and a card is used to direct it into the vessel of reception. To encourage the flow of blood the patient moves the lower jaw, as in mastication, now and then taking a deep breath. When the bleeding is ended, a bit of adhesive plaster is applied over the orifice, and a pledget placed upon it, which is maintained in place by a ligature wound closely, not tightly, round the neck, and fixed with a pin. Bloodletting at the neck is neither difficult nor dangerous, and is performed, at times, in cases of congestion of blood in the head, as in apoplexy, asphyxia from hanging, &c.—Bloodletting is much less frequently practised now than formerly. Some sects of medical practitioners repudiate the practice altogether, on what they deem sufficient physiological and medical authority; but the most eminent physicians, who combine a scientific education with many years of practical experience in the best hospitals of Europe and America, still recognize the necessity of bloodletting in some cases, as a means of producing immediate results of a salutary nature, where the life of the patient would be endangered by delay, and the adoption of a less heroic mode of treatment. Physiology forbids the loss of blood on all occasions of trifling indisposition, especially in feeble constitutions and in city populations, as was formerly of frequent occurrence in medical practice; and in fact, bloodletting is deemed by many not a branch of purely medical treatment at all, but rather a branch of surgical treatment, where accidents

and sudden necessities call for exceptional and rapid means of action. Both leeching and general bleeding are practised now more cautiously than formerly; and cupping, as a substitute for leeching, is practised with the same discretion by well-educated physicians. Some eminent medical writers who have been at the head of military hospitals for many years, and had the care, almost exclusively, of young, plethoric, active, and imprudent men, have found bleeding frequently necessary in their special line of experience, and are, therefore, apt to dwell too much upon its usefulness; while others not less eminent in the profession, who have had the care of aged and infirm patients almost exclusively for many years, in pauper hospitals and lunatic asylums, have found the practice of bleeding injurious in their peculiar line of personal experience, and, therefore, dwell with emphasis on the abuses of the lancet. Both are right in their respective experience; but neither line of special practice and experience covers the whole ground of physiology and medicine.

BLOOMARY, BLOOMS. Iron ores of pure quality and high percentage, like the magnetic and specular oxides, are frequently converted directly into malleable iron, without passing through the intermediate stage of cast or pig iron, which is the result of the blast-furnace process. This operation of making bar iron direct is accomplished in various sorts of furnaces, all of which have the same object in view, which is the separation of the matters combined and mixed with the iron, so that this shall be left in its simple metallic state. The ore is deoxidized by its oxygen combining with the carbon of the fuel; and the process must not be carried so far as to melt the ore, which could occur only by the iron combining with the carbon and assuming the state of cast-iron, and possibly of steel. The stony matters mixed with the ore, instead of flowing out, as from the blast furnace, in a liquid glass or cinder, which it is the first object of the blast-furnace process to produce, remain attached to the ball or *loupe* (Fr. *loupe*, a lump) of iron, and are separated from it by the mechanical work of rolling and stirring it in the fire, and of hammering or squeezing it after it is taken out. The most simple and generally adopted of the direct methods of making malleable iron from the ore is by the bloomary or forge fire. The establishments themselves are called bloomaries, and the lump of iron when finished under the hammer is called a bloom, from the German *blume*, flower, the metallic product being thus designated as the flower of the ore. By some the name is said to be given from the resemblance in the form of the bloom to the unopened corol of a campanulate flower. The term is applied to lumps of iron thus produced, whether in the bloomary fire proper, or in any of the other similar contrivances for effecting the same object, as, for example, the old *stück-ofen*, or *wulf-ofen*, of the Germans, the *fournearx-à-masse* of the French, the Catalan forge of the Pyrénées, and numerous inventions

of the Americans, as Benton's, Harvey's, &c.—The manufacture of iron by the bloomary process is the oldest method of producing this metal. Some form of the process is alluded to by Aristotle, and it was no doubt in operation long before his time, as the use of iron is several times alluded to by Homer in the *Iliad* and *Odyssey*, and also by the earliest sacred writers. Its invention is, in the book of Genesis, attributed to Tubal-Cain, who was of the 7th generation from Adam. It being a simple process, and easily practised by people possessed of little mechanical skill, we find it has long been in use by some even of the ruder nations of eastern Asia and of Africa. The inhabitants of Madagascar produce iron in this way, blowing their rudely constructed furnaces by means of an apparatus of hollow logs with loosely fitted pistons; and in central Africa the natives were seen by Mungo Park at the same work, forging small articles direct from the ore in open fires, which were kept in action by rude bellows worked by the hand. The Persians and some other of the Asiatic nations still retain a very ancient, possibly the primitive, mode of manufacture. A mere cavity in the earth, 6 inches or a foot deep, and double the depth in diameter, is lined with pulverized charcoal. Charcoal in fragments is thrown in and covered with ore, which may be fine and caked together with water, or in coarse pieces. Several alternate layers of charcoal and ore succeed, when the whole heap is covered with coal. It is then fired at the bottom, and the blast applied by large hand bellows, which blow through a pipe introduced in the lower part. In a few hours a small loupe is obtained, which is taken out and hammered by the hand. By reheating and hammering it is finally brought into shape and purified of cinder. The process is such as may be practised on a smaller scale in a blacksmith's forge; and it is a common experiment to thus convert rich pieces of ore into metallic iron for the purpose of exhibiting their richness and the ease of their reduction. It is not, however, a fair test of the quality of the metal the ore will produce, when worked in the large way; for in all these small operations, including even the most improved bloomary processes, it is an object to avoid so high a heat as to melt the ore, the effect of which would be the partial reduction of the metallic bases contained in the impurities, and their combination with the iron, to the injury of its qualities. A better quality of iron is thus obtained, than the same ores would produce, when reduced at the high heat of blast furnaces. The yield, however, is not so great, neither is the economy of fuel. Much iron is lost in the cinder, which has escaped deoxidation, or has been reoxidized by contact with the blast, and a large amount of coal is burned to waste upon these open fires. Still, as little outlay is required in commencing a small establishment of this kind, they are frequently to be met with in mountainous regions, where magnetic ores abound, and wa-

ter-power may be had upon every stream, and charcoal is worth little more than the labor of preparing and hauling it to the works. The product, easily obtained, is the most valuable quality of iron, which is readily converted at the forges into any desired forms, and which, if not required for the immediate neighborhood, is better able to bear the cost of transportation to a distant market than the cheaper pig-iron. Bloomaries were for these reasons early established in the magnetic ore districts on both sides of Lake Champlain, in the highlands on both sides of the Hudson river, and along the continuation of these hills with their metalliferous products through northern New Jersey and a part of Pennsylvania. As the cutting of the wood of these regions gradually made the supplies of charcoal more expensive, these works have, in the more accessible districts, been abandoned, while the others, profiting by their situation and the skill that has been applied to them, have reached in some instances an extent and degree of perfection, which has probably never before been attained in this manufacture. Clinton and Essex counties of northern New York have long been distinguished for their production of blooms. In 1850 there were no less than 200 bloomary fires in these 2 counties—as many as 21 in a single establishment, under 1 roof. The capacity of each fire is 1 ton of iron every 24 hours; but with ores of rich quality, and of coarse granular particles, each fire may be made to yield 100 lbs. of iron per hour. Poor ores are crushed and dressed and brought to the percentage of iron of about 65. The waste, however, is so great in this process that 2½ tons of ore is usually estimated as the amount required for a ton of iron. The value of the ore is about \$9. The quantity of charcoal consumed is about 250 bushels, which is worth from \$15 to \$17. The other item of expense is the bloomer's wages, which are usually paid by contract at the rate of \$11 per ton of iron, making the whole cost from \$35 to \$37 per ton. The process has been much improved by the use of the hot blast for blowing the fires. The temperature is raised to about 600° by exposing the blast-pipes to the escape heat in the chimney-stack. By this arrangement a considerable saving is effected in the consumption of charcoal. For reheating the blooms, in order to work them down under the hammer, it was formerly the custom to make use of separate fires, at an additional cost of fuel. To economize this extra consumption of charcoal, a reheating fire has been contrived back of the bloomary fire, in which the blooms are heated by the flame and gases, as these pass from the bloomary into the chimney. The combustion is here rendered very intense by hot air being driven in, through several blowpipes, from the same apparatus, which supplies the blast to the bloomary fire itself. Each reheating or gas furnace, as it is called, requires for its most efficient work the gases from 2 bloomary fires. It is found most advantageous to divide the air

among a number of blowpipes of small diameter, and to blow at a pressure of 2 to 8 lbs. to the square inch. Being thus introduced in small jets, a sheet of inflamed air is spread throughout the furnace, and the most intense heat is produced. These improved bloomaries have been found well adapted for the reduction of the rich specular and magnetic iron ores found on the southern shore of Lake Superior. They are much more readily constructed than the massive blast furnaces, are less dependent upon the proximity of extensive machine shops for being kept in repair, and may be stopped at any time and again started without involving the serious losses occasioned in the interruption of the blast of a high furnace. Perhaps the greatest difficulty attending them is the dependence of each fire upon 2 experienced hands (if run day and night), which is equivalent to the employment of 2 skilful men for every ton of iron made per day—a dependence, which, in districts remote from supplies of such labor, may prove to a large establishment of serious consequence.

BLOOMFIELD, ROBERT, an English pastoral poet, born at Honington, in Suffolk, Dec. 8, 1766, died at Shefford, in Bedfordshire, Aug. 19, 1823. At an early age he lost his father, a poor tailor, and was taught to read by his mother, who kept a dame-school. Not being sufficiently robust for a farmer's boy, he was taught the business of a shoemaker, and, in his brief leisure, read a few books of poetry, including Thomson's "Seasons," which he so greatly admired, that it suggested a rural poem, "The Farmer's Boy," in which he described the country scenes he had been familiar with in childhood. Several London publishers declined this poem, but it was seen by Mr. Capel Lofft, and under his patronage it was published, in 1800, at which time the author was 34 years old. Within 3 years over 26,000 copies were sold, and it was translated into German, French, Italian, and Latin. The duke of Grafton appointed Bloomfield to a government situation, which placed him in easy circumstances, but ill health caused him to retire from it, and return to his trade of ladies' shoemaker, the duke settling a shilling a day on him for the rest of his life. Finally, he retired to Sheffield, where he died poor, and £200 in debt, leaving a widow and four children. A subscription was raised to defray his debts, and afford a maintenance for his family. Mr. Bloomfield's "Farmer's Boy," which has often been reprinted, is by far his best production. His other principal works are, "Rural Tales and Ballads;" "Good Tidings;" "Wild Flowers;" the "Banks of the Wye;" "May-Day with the Muses."

BLOOMINGTON, a village and township in Indiana, and the capital of Monroe co. It was first settled in 1819, and is situated on a ridge between the east and west forks of White river. A railroad, from New Albany to Michigan City, passes through the village. About half of the houses in Bloomington are of brick, the remainder being built of wood. It is the seat of the state university, a flourishing institution,

organized in 1822, and possessing in 1852 about 175 students and a library of 4,200 volumes. Bloomington also contains a female academy, several churches, and 8 printing offices. Pop. in 1856, 8,000.

BLORA, a district of the residency of Surabaya, in the island of Java, which is noted for its valuable forests of teak. This celebrated tree, which yields the strongest and most durable timber for ship-building, or other economical purposes, is nowhere else found in the archipelago, except in a small portion of Mindano, and in the district of Bima in Sumbawa. The depot of the teak cuttings of Blora is on the Solo river, lat. 7° 10' S., long. 111° 30' E.

BLOSSBURG, a village and township on the Tioga river, Tioga co., Pennsylvania. Situated at the southern terminus of the Corning and Blossburg railroad, and surrounded by valuable mines of bituminous coal and iron, it is a place of some importance, and of rapid growth. There is a furnace in operation in its vicinity. Pop. in 1850, 850.

BLOUNT. I. A northern county of Alabama, drained by the sources of Locust and Mulberry forks of Black Warrior river, and comprising an area of 955 sq. m. Portions of the surface are mountainous, and covered with forests of excellent timber. The uplands also furnish good pasturage, and the valleys produce abundant crops of corn and cotton. Blount's Springs are in this county. The agricultural products in 1850 amounted to 267,025 bushels of corn, 28,420 of sweet potatoes, 21,204 of oats, and 248 bales of cotton. There were 18 churches, and the public schools numbered 435 pupils. Capital, Blountsville. Pop. 7,867, of whom 426 were slaves. II. A south-eastern county of Tennessee, bordering on North Carolina, and having an area of 450 sq. m. Holston river, on its N. W. boundary, is navigable by steamboats; the Tennessee touches it on the west, and Little river and numerous small creeks intersect it. The surface is traversed by several mountain ridges, the principal of which are Iron or Smoky mountain, and Chilhowee mountain. The soil is fertile and carefully tilled. The products in 1850 were 621,981 bushels of corn, 86,107 of wheat, 175,814 of oats, and 71,651 lbs. of butter. There were 15 churches, and 1,288 pupils attending public schools. Marble, limestone, and iron ore, are the principal minerals. Capital, Marysville. This county is one of the oldest in the state, and was named in honor of Willie Blount, the first governor of Tennessee. Pop. 12,882, of whom 1,084 are slaves.

BLOUNT, CHARLES, an English deistical writer, born in Upper Holloway, April 27, 1654, died in Aug. 1693. In 1679 he published *Anima Mundi*, a work giving a historical account of the opinions of the ancients concerning the human soul beyond this life. This work was deemed so unchristian in its tendencies, that it gave great offence to pious readers. He also published a

work entitled "Great is Diana of the Ephesians," and a translation of the life of Apollonius of Tyana, by Philostratus, both considered to be of the same irreligious tendency, and the latter of which was suppressed on that account. His zeal for the revolution of 1688 was so great that he wrote a pamphlet, in which he claimed the accession of William and Mary as a conquest. This tract was ordered to be burnt by both houses of parliament. He wished to marry the sister of his deceased wife, who was inclined to the union, but both the law and the scruples of the lady herself interposed, some tracts he had written in favor of such marriages having failed to convince her. In grief at this disappointment he committed suicide.

BLOUNT, SIR HENRY, an English traveller, father of the preceding, born at Tittenhanger, in Hertfordshire, Dec. 15, 1602, died there Oct. 9, 1682. He published an account of his travels in Turkey and Egypt; fought for Charles I. in the battle of Edgehill; but after the execution of Charles, espoused the cause of the parliament, and kept himself in favor by a strong hostility to tithes. At the restoration he succeeded in reinstating himself in the royal favor, and was appointed high sheriff of Hertford.

BLOUNT, SIR THOMAS POPE, eldest son of the preceding, an English author, born in Upper Holloway, Sept. 12, 1649, died in June, 1697. He served in 5 parliaments, in 2 of which he was returned for St. Albans, and in the remaining 3 for Hertfordshire. His literary reputation rests particularly on a work entitled *Censura Celebriorum Authorum*, which Hallam mentions with commendation. Blount also wrote a work on natural history.

BLOUNT, THOMAS, an English writer, born in Bardsley, Worcestershire, in 1618, died at Orleton, Dec. 26, 1679. His first production was entitled the "Academy of Eloquence" (1654), which has been often reprinted. He next published a "Dictionary of Hard Words" (1656); "Lamps of the Law, and Lights of the Gospel" (1658); "Boscobel" (1660); "Boscobel, part 2d" (1681), and a "Law Dictionary" (1671), beside some works of less importance. He was a zealous Roman Catholic, the author of a Catholic almanac, and of a catalogue of the Catholics who lost their lives in the king's cause. The outbreak of the plot of 1678 created so much ill-feeling against his co-religionists that he led thenceforward an unsteady and restless life, and the anxiety preying upon a constitution already weakened by excessive study impaired his health and resulted in his death.

BLOUNT, WILLIAM, an American politician, born in North Carolina, in 1744, died in Knoxville, Tenn., March 26, 1800. He was twice a member of the continental congress, a signer of the new constitution in 1787, and governor of the territory south of the Ohio, coincident with the present state of Tennessee, in 1790. After the formation of this territory into a state in 1796, he was elected one of its first senators in

the national congress. In 1797 he was impeached by the house of representatives for having intrigued, when governor of the territory, to transfer New Orleans and the neighboring districts to Great Britain, by means of a joint expedition of English and Indians. He was expelled from the senate, and the process was, therefore, after a protracted discussion, dropped in the house. The proceedings against him increased his popularity among his constituents, by whom he was presently elected to the state senate, of which he was chosen president.

BLOW, JOHN, an English composer, born in Nottinghamshire in 1648, died in 1708. On the accession of Charles II., he became a chorister in the chapel royal, and though only a child, composed several anthems. He afterward became organist of Westminster abbey, and on his monument there is engraved the *Gloria Patri*, one of his first canons.

BLOWING MACHINES. Beside the common bellows, which has been already described, a variety of other machines have been devised for the purpose of propelling air in large volume, or with great pressure and volume together. The most efficient of these machines are the blowing cylinders, which are used to supply air to blast furnaces, and by their great size and strength, are made to furnish immense bodies of air under great pressures. Fan-blowers are used for supplying large volumes of air, but for purposes in which a high pressure is unimportant. The water blowing machine, for which we have neither name nor use in this country, but which is well known in the mining regions of central and southern Europe by the name of *trompe*, is too ingenious, and may, in some situations, prove too valuable a contrivance to allow of its being passed over without notice. And there is also, in the same countries, a very simple blowing apparatus, used for ventilating mines, also too little known in this country, called the *ventilateur du Hartz*, which is well worthy of notice.—The blowing cylinders of best construction are made of cast-iron, the inner surface turned perfectly true, fitted with air-tight iron heads, each of which is furnished with a large valve, corresponding to the clapper of the bellows, opening inward. Through the centre of the heads the smooth iron piston rod moves in close packing, carrying a piston which is fitted accurately to the cylinder. As the piston moves in one direction, the air enters through the valve in the head behind it, while that in front is forced through an aperture on one side, which is furnished with a valve opening outward, and connects with a pipe leading to any desired point. By reversing the motion the end exhausted of air is refilled, while the other, by the shutting of the valve through which the air entered, is made to furnish its contents through the side opening to the same main pipe, which connects with the other end. The principle of the machine is thus the same as that of the double acting force pump

for propelling water. By the alternate motion of the piston, a current of air is maintained of considerable steadiness, and of quantity and pressure according to the size of the cylinder and its valves, the rapidity of the movement, and the power applied. The pressure is equalized by the use of an air receiver of great capacity, into which the air is forced through a larger aperture than that for its exit; its elasticity is thus made to act as a perfect spring. For propelling the air into furnaces for making iron from the ore, called blast furnaces, the blowing cylinders are made of great size and strength. They are often set in pairs, upon horizontal frames of cast-iron, the piston rods being connected with cranks geared to the main shaft of the steam-engine. Two such cylinders, of 5 ft. diameter and 6 ft. stroke, afford, at a common rate of running (as 8 full strokes per minute), sufficient air for a first-class furnace. No allowance being made for escape of air, and room occupied by the piston and rod, each movement of the piston should discharge the contents of the cylinder, which are 117.81 cubic ft. A full revolution of the crank discharges it twice, and this being repeated 8 times in a minute, the effect of the 2 cylinders is to drive forward 3,870 cubic ft. every minute. Instead of being placed horizontally, a single blowing cylinder is sometimes used of great dimensions, placed upright, and the piston rod attached to one end of the lever-beam of the steam-engine, the steam cylinder connecting with the other end. Some are also connected by the same piston rod passing through the steam cylinder and blowing cylinder, without the intervention of either beam or gearing. At the large and thoroughly built iron works of the Thomas iron company, upon the Lehigh river, in Pennsylvania, 2 large steam-engines are employed to blow the 2 furnaces. The lever beam of each engine connects with a blowing cylinder of 7½ ft. diameter and 9 ft. stroke. The rate of running is 9 full strokes per minute. Thus about 7,156 cubic ft. of air should be driven every minute into each furnace. The pressure of the blast in this instance is often 8 lbs. upon the square inch, but 4 or 5 lbs. is a more ordinary rate. From the cylinders the air is conveyed to a large air receiver of boiler-plate iron, 108 feet long and 6½ feet diameter. By this very efficient arrangement the blast is delivered into the furnaces at an almost uniform pressure. The air receivers are sometimes made of still greater capacity. There was at the Hudson iron company's furnaces a globe of boiler-plate iron made for this purpose, 40 feet in diameter, which gave a very steady pressure to the blast, until it exploded by the collection of explosive gases passing back from the furnace to the receiver, and being there inflamed. Blowing cylinders have often been constructed of wood for the sake of economy. The wood, thoroughly seasoned, is put together in thin pieces, their width making the thickness of the tube; the pieces are laid one upon another, breaking joints, and secured by glue

and nails.—Fan-blowers are short cylinders of cast iron, through the axis of which passes a shaft, made to revolve, by a pulley attached to it outside of the cylinder. Upon the shaft within the box are placed 4 or 5 wings, which when rotating pass near to the inner surface of the cylinder. The apparatus, drawn in section, is like an undershot water-wheel enclosed in a box. Around the axle, openings are left in the sides of the box for the admission of the air. This may for purposes of ventilation be drawn from a distance through air-pipes discharging into the box. The motion of the wings carries the air around, and a new supply enters to be taken on by the next wing. The discharge is through a box or pipe placed at a tangent to the cylinder and opening into it. The bottom of this box forms the base upon which the apparatus rests; and in some machines, as this lower plate curves around to form the case of the blower, it is made to take a spiral form instead of that of a true cylinder, the radius of the circle lessening as the arc is produced. This is called the eccentric fan; the other, in which the revolving axis is in the centre of the cylinder, is the concentric fan. The latter is supposed to work to disadvantage by carrying around a portion of the compressed air a second time, while the wings of the other, revolving above the bottom of the discharged box, afford more room for the escape of the air, and, at the same time, cut off, as they pass into the upper portion of the box, and close to its inner surface, the entrance for any air from without. By giving the high speed at which the fans are made to revolve, a large body of air is discharged through the aperture, but with little pressure. It is not unusual to run them at the rate of 1,200 revolutions per minute, and for the air at its discharge to have a velocity of 3,280 feet in the same time. According to the statements of Dr. Ure, published in the "Philosophical Transactions," the velocity of the discharge is actually about $\frac{1}{4}$ of that of the extremities of the fan-blades. If the effective velocity of these be 70 feet per second, and the area of the discharge-pipe be 3 feet, the quantity of air discharged is 310 feet, or 12,600 feet per minute. The weight of this amount of air is about 969 lbs. For a heavy body falling to acquire a velocity of 70 feet per second, the height of the fall must be 76.5 feet. This, multiplied by the number of lbs. moved, and divided by 88,000, will give the horse-power, which in this case is 2.24, required to produce this result. The pressure of the blast is rarely more than from $\frac{1}{4}$ to $\frac{1}{2}$ lb. upon the square inch; hence the fan can only be used, where no great resistance is offered to the blast. It is admirably adapted for blowing a large number of open fires, or for cupola furnaces. A recent improvement to the fan has been introduced in England, called Chaplin's duplex pressure fan. Two fans are set upon one axis, the driving pulley being between them; one, a little smaller than the other, receives the air through its central aperture.

The discharge-pipe conveys it, compressed in bulk, to the corresponding opening in the other. Here it is further compressed. By adding to the number of fans, on the same principle, the pressure of the blast may be still more increased.—In Hoe's foundry, New York, a blower of novel construction, called Mackenzie's, is in use, which, working on the principle of the fan, is stated to give a pressure of more than 1 lb., while it revolves only 75 times per minute. A cylinder 80 inches in diameter is made to revolve in a fixed cylinder of 40 inches diameter, and 3 feet length. The 2 cylinders are eccentric, the centres being 5 inches apart; their surfaces consequently meet on one side, and are 10 inches apart on the other. The ends are close; the air is admitted into the outer cylinder on one side near the touching surface, and is discharged near the same point through an opening on the other side. Wings or blades are attached to a shaft connected with the inner cylinder, and carried round with it, but on the centre of the larger one; the inner cylinder thus slides in its revolution in and out upon the wings, producing the effect of these being thrust out and withdrawn. The blast is said to be nearly steady and continuous, a slight fluctuation of pressure occurring when each wing commences crossing the delivery opening.—The trompe is a machine dependent upon a current of water falling from a considerable height. It consists of a large pipe, 3 feet square or thereabout, leading from an upper reservoir of water to a cistern or box, that may be from 25 to 80 feet or more below it. A few feet under the cistern, the pipe is contracted in the shape of a funnel in order to divide the water into many streamlets in its fall. Below this narrow place are a number of holes through the pipe for the admission of air. This is taken down by the water as it descends, and passes into the middle of the cistern at the bottom, where a block is placed, upon which the water dashes, causing the air to separate from it. The water passes through a hole in the bottom of the cistern into a side-box, in which is placed a valve for checking the exit of the water, that the air which collects in the upper part of the cistern may be kept at any desired pressure. From the top of the cistern a small air-pipe conveys the blast to any required point. This apparatus is used for furnishing air to cupelling and melting furnaces.—The *ventilateur du Harts* is an apparatus of great simplicity, designed to be connected with any part of the machinery about mines, that will give a slow alternating motion, and which is usually kept in action, the object being to furnish a continual supply of air to mines. Two cylindrical-shaped vessels, such as long casks, are selected, of such sizes, that one, when inverted, may easily move up and down within the other. The outer one is nearly filled with water, and is furnished with an air-pipe, which leads from its upper part through the water, and through its bottom, down into the mine.

Upon the upper end of this pipe is a valve opening downward. The inner inverted cask surrounds this pipe. It has upon its upper end a large valve opening within. Being now suspended by a chain to the end of a lever-beam, or to the arm of a bob, air passes within, as it is lifted up, and is propelled, as it descends, through the pipe. By this alternating motion a continual current of air is supplied with little cost of power or attention. A more perfect arrangement of this machine is in making it double, by attaching one to each end of the lever-beam. For blowing furnaces these machines have the common objection of all water-blasts, of causing the air to take up more or less moisture, which is discharged into the furnace, and must, to some extent, diminish the effect of the blast.

BLOWPIPE. In its simplest form this is a small metallic tube of tapering shape, its smaller end curved around to form a right angle, and the larger end of convenient size for applying to the mouth. It is 8 or 10 inches in length, with a bore varying from $\frac{1}{16}$ to $\frac{1}{8}$ of an inch, but drawn out at the small extremity to a very minute aperture. Through this air is blown upon the flame of a lamp, causing a portion of the flame to be diverted in a jet of intense heat. It is an instrument of great use with jewellers for soldering small pieces of work, and with glassblowers and enamelers, for softening and working small articles. By these it is often used upon a larger scale with a bellows for supplying it with air, instead of furnishing this by the mouth. But the most important use of the blowpipe is to the mineralogist and analytical chemist, in whose hands it is made to serve the purpose of a small furnace, with the advantage that the operations taking place are directly under the eye. When used, the point is placed in the flame of a lamp, and the current of air is directed across this, by a steady blast from the mouth. A lateral cone of flame is thus produced, which is yellow without and blue within. At the point of the inner blue cone is the greatest intensity of heat. A small particle of metallic ore placed upon charcoal, and kept at this point may be reduced to a metallic state; the charcoal itself aiding the process by its chemical action in abstracting the oxygen of the ore. If of difficult reduction, the experiment may be aided by the introduction of proper fluxes, as in crucible operations. The outer yellow flame in contact with the air possesses oxidating properties; and in this the preparatory operation of calcining and desulphurizing is effected upon the particle of ore, before it is submitted to the reducing flame. Control is thus had over any desired amount of heat, and with a facility of employing it for different purposes in a small way, which renders the blowpipe far preferable for experimental purposes to the cumbersome furnaces and other expensive apparatus which were required before its application for deter-

mining the properties of mineral substances. The process of cupellation is very readily effected upon small pieces of metallic lead containing silver or gold. The button of metal is placed in a small cupel of bone ash, and this is laid upon a piece of charcoal for a support. It is thoroughly heated and the button melted in the reducing flame, and then exposed to the action of the oxidizing flame. In this the lead is kept in fusion, and a pellicle of oxide of lead is continually formed upon the surface, and as constantly absorbed in the cupel, till the lead is all thus removed, and the little globule of the more precious metal, so small perhaps as to be scarcely visible, is kept as a bright point in the centre of the cupel. By working upon a weighed quantity in repeated operations, and adding the products to each other, the analysis may be made quantitative, by the use of the ingeniously contrived apparatus applied by Plattner to the estimation of the weight of minute bodies. Another important use of the instrument is melting small particles of undetermined substances with different fluxes, as borax, carbonate of soda, &c., upon a fine piece of platinum wire, hooked at the end to sustain the little bead. By the reaction of the ingredients of the substance with the flux, as seen in the mode of melting, color of the bead in one flame, and its change to another color in the other flame, these ingredients are detected and the compound determined. The qualitative analysis is rendered more complete by subjecting the substance to the action of the blowpipe in glass tubes, for the purpose of detecting the volatile ingredients, as water by the steam, ammonia by its vapor and odor, sulphur by its odor and yellow sublimate, arsenic by the metallic ring it forms around the inside of the tube, where its vapor condenses. This may be satisfactorily effected, as already stated under the article **ARSENIC**, where the particle under examination is too small to be visible without the aid of the microscope. The substance may also be dissolved in acids in glass tubes, and the precipitates obtained, freed from some of their associated matters, be subjected to the test by the blowpipe. Thus the blowpipe, with a few simple instruments and some tests, all of which may be easily transported, serves the purpose of a portable laboratory. In skilful hands all mineral substances may be determined, and a complete qualitative analysis made by it; and by the improvements introduced by Prof. Plattner, many quantitative analyses may be effected for practical purposes.—The blowpipe was first applied to the examination of minerals by Swab, counsellor of the college of mines in Sweden in 1738. Cronstedt, of the same country, next took up the subject, and made great use of the blowpipe for distinguishing minerals by their chemical properties. This was for his work on mineralogy, in which he introduced the classification of minerals according to their chemical composition. This book was first published in 1758, and was translated into English by Von

Engeström in 1765, who added to it a treatise upon the blowpipe, and the manner in which it was used by Cronstedt. The attention of scientific men was thus directed to its great use as an analytical instrument, but the difficulty of learning to apply it, without practical instruction, prevented its being so generally received as it deserved to be, and unless the Swedish chemists had continued to employ and improve it, it might, after all, have fallen into disuse. Bergman found it very serviceable in his chemical researches, and Gahn, who assisted him, carried its use to a higher state of perfection, than had before been attained. Berzelius enjoyed the most friendly intercourse with this remarkable man, and preserved in his "Elements of Chemistry" the most important results of the experiments, which Gahn never took upon himself to publish. Speaking of Gahn in a later work ("Treatise upon the use of the Blowpipe"), he remarks that when travelling, he always carried this instrument, and all new substances which he met with he subjected to its test; and it was an interesting thing to see the readiness and certainty with which he ascertained the nature of substances not recognizable by their external properties. Long before the subject of vegetable substances containing copper was brought to public notice, Berzelius says he has often seen Gahn extract from the ashes of a quarter of a sheet of paper particles of metallic copper visible to the eye. The most perfect form of the instrument now in use is that adopted by Gahn. The long, straight tube which serves as the handle, passes into one end of a cylinder $\frac{1}{4}$ of an inch long, and $\frac{1}{4}$ an inch in diameter, from the side of which the jet-tube projects about $1\frac{1}{2}$ inch to its capillary extremity. The object of the cylinder is to intercept the moisture of the breath, which, without such an arrangement, passes through the tube, and is projected in drops into the flame. Berzelius added a little jet of platinum, which slips over the end of the brass jet, and which may be taken off and cleaned, whenever it becomes obstructed, by burning out the impurities with the blowpipe itself. Several of them, with holes of different diameters, accompany the instrument, and are changed as the flame is desired more pointed and intense, or of less intensity, and to cover a larger surface. Considerable practice is required to blow continually without exhausting the lungs. This is done by breathing only through the nostrils, and using the cheeks for propelling the air. By this means a steady current may be kept up for a long time without fatigue. The process is with some persons very difficult of attainment, but is at last caught, one knows not how, and is never afterward lost. The treatise on the blowpipe, by Berzelius, has long occupied the first rank among the works upon this subject. It has been translated in this country by Mr. J. D. Whitney. Prof. Plattner, of the royal smelting works at Freyberg, has incorpo-

rated the results of his operations with the blowpipe in a work of great interest, which has been translated into English by Dr. Muspratt. This forms a very valuable manual, containing the descriptions of the various processes for estimating the quantities in which many of the metals are found in their natural and artificial compounds, as also for detecting the qualities of metallic combinations in general. The methods adopted by Prof. Plattner for separating the minute particles, and ascertaining their weights, are of great ingenuity and simplicity, and valuable for the promptitude with which they may be used; but to be successfully practised, they require long and patient use of the instruments, and an especial talent for the work. The little globules of gold and silver extracted from their combinations by the blowpipe, are too small to be weighed, but their quantity is determined by a method introduced by Harkort of measuring their diameter. This is done by running the globules along between two lines upon an ivory scale, which diverge at a very small angle, and are crossed by many other lines at equal distances from each other, which serve as the divisions of the scale. Wherever the globule is found to be contained between the 2 diverging lines, its diameter is at once obtained, and the weight corresponding to this, whether of gold or of silver—these having been previously determined with care for the scale. To insure exactness in the measurement, a good magnifying glass is required, and care to view the scale in a position perpendicular to the line of sight. Although the globules are not often perfectly spherical, it has been found, in practice, that within certain limits, this method may be relied on for the approximate analysis of many metallic compounds.—The compound or oxyhydrogen blowpipe is an apparatus invented by Dr. Robert Hare of Philadelphia, in the early part of the present century. By this a mixture of oxygen and hydrogen is made to produce the jet, which being inflamed just beyond their point of mixing, an amount of intense heat is evolved far exceeding what had ever been before obtained. Substances hitherto regarded as infusible were melted down with great facility. Pure lime, magnesia, and platinum were thus fused, and the first named was observed to give an intensity of light greater than had ever before been seen. This caused its use to be recommended by Lieutenant Drummond of the British navy for light-houses, and his name has since been applied to the light, which was first obtained and noticed by Dr. Hare. The first arrangement adopted by Dr. Hare was to collect each gas in a separate reservoir, and cause them to be discharged by separate jets at the point of combustion. But finding a more intense heat is generated by first mixing them under some pressure, he brought them into a single tube, and caused this to terminate in 15 jet pipes of platinum. These were adjusted so as to pass through a vessel, in which ice or snow could

be placed to keep the gases from becoming heated, and thus obviate the danger of explosion by a retrocession of the flame into the single pipe. With an apparatus of this kind Dr. Hare succeeded in fusing large quantities of platinum, and at the meeting of the American philosophical society in January, 1889, he exhibited a specimen of the metal, weighing between 22 and 23 ounces troy weight, which was part of a mass of 25 ounces fused in May, 1888, about 2 ounces of the metal having flowed over in consequence of the cavity not being sufficiently capacious to contain it all. He also obtained platinum directly from the crude product of the mines. Dr. Hare observed that the most intense heat was generated when the proportion of the gases was the same as in water, viz., 2 volumes of hydrogen and 1 of oxygen, and that by the use of a condensing syringe for forcing the mixture with considerable pressure, the effect was still further increased. With this modification, Prof. Clarke, of the university of Cambridge, England, repeated the experiments made years previously by Dr. Hare. He also enclosed in the pipe leading from a vessel containing the two gases a great number of layers of fine wire gauze. Though his experiments were successful, and were a subject of great scientific interest, the apparatus proved too dangerous for use, the wire gauze not preventing the explosion of the gases. On these experiments the whole merit of the discovery has been claimed in England for Dr. Clarke; and in the article *BLOWPIPE* in the last edition of the "Encyclopædia Britannica," no mention whatever is made of Dr. Hare's, but a full description is given of Dr. Clarke's experiments, when even the apparatus he used was the contrivance of Mr. Newman, according to Dr. Turner, who justly gives the whole credit of the discovery to Dr. Hare. Neither does the article in the "Britannica" make any mention of the improvements afterward made in the apparatus by Mr. Goldsworthy Gurney, by which the gases were mixed in a reservoir, and passed through a vessel nearly filled with water, and from this through a safety chamber of cylindrical form, which was filled with numerous disks of fine wire gauze closely packed. Further improvements have still been introduced by filling the safety chamber with alternate layers of wire gauze and of the finest fibres of asbestos. Brass wires are also used, packed closely together in a bundle and pressed into the cylindrical portion of the chamber. The quality of the oxygen is found to have a sensible effect upon the intensity of the heat, that obtained from chlorate of potash being much preferable to that from the oxide of manganese. No substances are found capable of resisting the high temperatures obtained by this blowpipe. The most difficult to melt is the carbonate of magnesia; but even this is converted into granules of enamel, which are so hard as to scratch glass. Platinum melts instantly, and gold in contact with borax is en-

tirely volatilized. Pure lime and its compounds give an amethystine tinge to the flame as they melt. Quartz crystal melts with a beautiful light; pieces of china ware are fused and form crystals, and flints produce a transparent glass.—An apparatus of great efficiency and simplicity of construction has recently been constructed in New York city by the Drs. Roberts, dentists, for remelting platinum scraps, and converting them into merchantable plate. They employ 2 copper gasometers of cylindrical form, 1 for each gas, that for hydrogen of the capacity of 220 gallons, and that for oxygen of 80 gallons. The pressure of the Croton water, which is about 60 lbs. to the square inch, forces the gases through metallic pipes to the apparatus connected with the burner. Each pipe connects with a short brass tube, which is closely packed with wire, and these unite in another brass tube, which is also closely packed in the same way. From this, by a pipe of only about a quarter of an inch diameter, the mixed gases are then conveyed to the burner. This is a small platinum box inserted in a lump of plaster of Paris and asbestos, the apertures in the disk making its extremity being 21 little holes in 3 rows, such as might be made by the point of a pin. The platinum disk in which these holes are perforated is only about $\frac{1}{4}$ by $\frac{1}{4}$ inch in size. It is found that copper answers the purpose quite as well as platinum. The lump of plaster is constructed like the water-tower of a forge or furnace, and is kept cool by a current of cold water constantly flowing through it. The supply of the gases is regulated by stop-cocks, one for each gas, placed near the point of their coming together. The jet points downward. The platinum scraps are first compressed in an iron mould into cylindrical cakes of the weight of 3 or 4 ounces each. Two or three of these are set upon a thin flat fire-brick, and heated in a furnace to a white heat. Being then transferred with the fire-brick to a large tin pan like a milk pan, which is well coated within with plaster of Paris, and brought under the jet, this is instantly ignited, and the platinum at once begins to melt. Its surface assumes a brilliant appearance of the purest white, like that of silver, and soon the whole is melted into one mass; but so great is its infusibility, that it chills before it can flow off the flat surface of the fire-brick. It cannot, therefore, be cast in a mould. For the uses to which platinum is applied, this, however, is of no consequence, as the cake of metal is easily hammered into any desired shape, or may be rolled at once into plates, or cut and drawn into wire. With the apparatus of the Drs. Roberts 53 ounces of platinum were melted into one cake at one operation, lasting only 18 minutes, in April, 1888. This was hammered down without waste, and drawn out into a plate over 40 inches long, and about 8 inches in width.—A compound blowpipe is conveniently obtained by blowing with a bellows, under some pressure, a current of atmospheric air

through a burner of suitable form attached to the common gas-pipes, so that the gas is furnished with the oxygen required for its combustion in a state of intimate mixture. By this method the effect of a furnace is obtained by chemists for melting the contents of small crucibles in analytical operations. If either or both gases be passed through heated pipes, a still higher degree of heat may be obtained. By substituting oxygen for the atmospheric air, globules of platinum may be instantly melted upon charcoal. This mixture may be conveniently and economically used instead of hydrogen and oxygen for the production of the Drummond light.

BLUBBER, the layer of fat which lies just beneath the skin of the whale and of other large sea animals. In the Greenland whale its thickness is 8 to 10 inches. About the under lip it is sometimes 2 or 3 feet thick. The blubber, when tried out, yields the oil that is obtained from these animals. A single whale frequently furnishes 80 tons of blubber, from which are extracted over 20 of oil. The use to the whale of this accumulation of fat is to preserve in the cold climate he frequents sufficient vital heat, also to protect him against the great pressure of the deep waters, and to render his body specifically lighter than the surrounding water. American whale ships carry large boilers for converting on board the blubber into oil. The English cut it up and pack it into casks, in which it is allowed to become rancid, and on the return home the blubber is tried out. Among the Esquimaux blubber is a highly esteemed article of diet, and in exceedingly cold climates is better adapted for supporting life than any other class of food. Even with whalemen and arctic navigators it is sometimes found palatable in the extreme northern latitudes.

BLÜCHER, GEBHARD LEBERRECHT VON, prince of Wahlstadt, Prussian field-marshal, born Dec. 16, 1742, at Rostock, in Mecklenburg-Schwerin, died at Kriebitz, in Silesia, Sept. 12, 1819. He was sent in 1754, while a boy, to the island of Rügen, and there secretly enlisted in a regiment of Swedish hussars as ensign, to serve against Frederic II. of Prussia. Made prisoner in the campaign of 1758, he was, after a year's captivity, and after he had obtained his dismissal from the Swedish service, prevailed upon to enter the Prussian army. March 8, 1771, he was appointed senior captain of cavalry. In 1778, Capt. von Jägersfeld, a natural son of the margrave of Schwedt, being appointed in his stead to the vacant post of major, he wrote to Frederic II.: "Sire, Jägersfeld, who possesses no merit but that of being the son of the margrave of Schwedt, has been preferred to me. I beg your majesty to grant my dismissal." In reply Frederic II. ordered him to be shut up in prison, but when, notwithstanding a somewhat protracted confinement, he refused to retract his letter, the king complied with his petition in a note to this effect:

"Capt. von Blücher may go to the devil." He now retired to Polish Silesia, married soon after, became a farmer, acquired a small estate in Pomerania, and, after the death of Frederic II., re-entered his former regiment as major, on the express condition of his appointment being dated back to 1779. Some months later his wife died. Having participated in the bloodless invasion of Holland, he was appointed lieutenant-colonel, June 8, 1788. Aug. 20, 1790, he became colonel and commander of the 1st battalion of the regiment of hussars he had entered in 1760. In 1794 he distinguished himself during the campaign in the palatinate against republican France as a leader of the light cavalry. Being promoted, May 28, 1794, after the victorious affair of Kirrweiler, to the rank of major-general, the actions of Luxemburg, Kaiserslautern, Morckheim, Weidenthal, Edesheim, Edenkoben, secured him a rising reputation. While incessantly alarming the French by bold *coups de main* and successful enterprises, he never neglected keeping the head-quarters supplied with the best information as to the hostile movements. His diary, written during this campaign, and published in 1796, by Count Goltz, his adjutant, is considered, despite its illiterate style, as a classical work on vanguard service. After the peace of Basel he married again. Frederic William III., on his accession to the throne, appointed him lieutenant-general, in which quality he occupied, and administered as governor, Erfurt, Mühlhausen, and Münster. In 1805 a small corps was collected under him at Bayreuth to watch the immediate consequences for Prussia of the battle of Austerlitz, viz., the occupation of the principality of Anspach by Bernadotte's corps. In 1806 he led the Prussian vanguard at the battle of Auerstädt. His charge was, however, broken by the terrible fire of Davoust's artillery, and his proposal to renew it with fresh forces and the whole of the cavalry, was rejected by the king of Prussia. After the double defeat at Auerstädt and Jena, he retired down the Elbe, while Napoleon drove the main body of the Prussian army in one wild chase from Jena to Stettin. On his retrograde movement, Blücher took up the remnants of different corps, which swelled his army to about 25,000 men. His retreat to Lübeck, before the united forces of Soult, Bernadotte, and Murat, forms one of the few honorable episodes in that epoch of German degradation. Since Lübeck was a neutral territory, his making the streets of that open town the theatre of a desperate fight, which exposed it to a 3 days' sack on the part of the French soldiery, afforded the subject of passionate censure; but under existing circumstances the important thing was to give the German people one example, at least, of stanch resistance. Thrown out of Lübeck, he had to capitulate in the plain of Radkow, Nov. 6, 1806, on the express condition that the cause of his surrender should be stated in writing to be "want of ammunition and provisions." Liberated on his

word of honor, he repaired to Hamburg, there, in company with his sons, to kill time by card-playing, smoking, and drinking. Being exchanged for Gen. Victor, he was appointed governor-general of Pomerania; but one of the secret articles of the alliance concluded, Feb. 21, 1812, by Prussia with Napoleon, stipulated for Blücher's discharge from service, like that of Scharnhorst, and other distinguished Prussian patriots. To soothe this official disgrace, the king secretly bestowed upon him the handsome estate of Kunzendorf, in Silesia. During the years that marked the period of transition between the peace of Tilsit and the German war of independence, Scharnhorst and Gneisenau, the chiefs of the Tugendbund, desiring to extemporize a popular hero, chose Blücher. In propagating his fame among the masses, they succeeded so well, that when Frederick William III. called the Prussians to arms by the proclamation of March 17, 1813, they were strong enough to impose him upon the king as the general-in-chief of the Prussian army. In the well-contested, but for the allies unfortunate, battles of Lützen and Bautzen, he acted under the command of Wittgenstein. During the retreat of the allied armies from Bautzen to Schweidnitz, he lay in ambush at Haynau, from which he fell, with his cavalry, on the French advanced guard under Maison, who, in this affair, lost 1,500 men and 11 guns. Through this surprise Blücher raised the spirit of the Prussian army, and made Napoleon very cautious in pursuit. Blücher's command of an independent army dates from the expiration of the truce of Trautenberg, Aug. 10, 1813. The allied sovereigns had then divided their forces into 3 armies: the army of the north under Bernadotte, stationed along the lower Elbe; the grand army advancing through Bohemia, and the Silesian army, with Blücher as its commander-in-chief, supported by Gneisenau as the chief of his staff, and Müffling as his quartermaster-general. These 2 men, attached to him in the same quality until the peace of 1815, supplied all his strategical plans. Blücher himself, as Müffling says, "understood nothing of the strategical conduct of a war; so little indeed, that when a plan was laid before him for approval, even relating to some unimportant operation, he could not form any clear idea of it, or judge whether it was good or bad." Like many of Napoleon's marshals, he was unable to read the maps. The Silesian army was composed of 3 *corps d'armées*: 40,000 Russians, under Count Langeron; 16,000 men under Baron von Sacken; and a Prussian corps of 40,000 men under Gen. York. Blücher's position was extremely difficult at the head of this heterogeneous army. Langeron, who had already held independent commands, and demurred to serving under a foreign general, was, moreover, aware that Blücher had received secret orders to limit himself to the defensive, but was altogether ignorant that the latter, in an interview, on Aug. 11, with Barclay de Tolly, at Reichenbach, had extorted the

permission to act according to circumstances. Hence Langeron thought himself justified in disobeying orders, whenever the general-in-chief seemed to him to swerve from the preconcerted plan, and in this mutinous conduct he was strongly supported by Gen. York. The danger arising from this state of things became more and more threatening, when the battle on the Katzbach secured Blücher that hold on his army which guided it to the gates of Paris. Marshal Macdonald, charged by Napoleon to drive the Silesian army back into the interior of Silesia, began the battle by attacking, Aug. 26, Blücher's outposts, stationed from Prausnitz to Kraitsch, where the Neisse flows into the Katzbach. The so-called battle on the Katzbach consisted, in fact, of 4 different actions, the first of which, the dislodging by a bayonet attack from a plateau behind a ridge on the right bank of the Neisse of about 8 French battalions, which constituted hardly one-tenth of the hostile force, led to results quite out of proportion to its original importance, in consequence of the fugitives from the plateau not being collected at Niedererayn, and left behind the Katzbach at Kraitsch, in which case their flight would have had no influence whatever on the rest of the French army; in consequence of different defeats inflicted at nightfall upon the enemy by Sacken's and Langeron's corps stationed on the left bank of the Neisse; in consequence of Marshal Macdonald, who commanded in person on the left bank, and had defended himself weakly till 7 o'clock in the evening against Langeron's attack, marching his troops at once after sunset to Goldberg, in such a state of exhaustion that they could no longer fight, and must fall into the enemy's hand; and, lastly, in consequence of the state of the season, violent rains swelling the otherwise insignificant streams the fugitive French had to traverse—the Neisse, the Katzbach, the Deichsel, and the Bober—to rapid torrents, and making the roads almost impracticable. Thus it occurred, that with the aid of the country militia in the mountains on the left flank of the Silesian army, the battle on the Katzbach, insignificant in itself, resulted in the capture of 18,000 to 20,000 prisoners, above 200 pieces of artillery, and more than 800 ammunition, hospital, and baggage wagons, with baggage, &c. After the battle Blücher did every thing to instigate his forces to exert their utmost strength in the pursuit of the enemy, justly representing to them that "with some bodily exertion they might spare a new battle." Sept. 3, he crossed the Neisse, with his army, and on the 4th proceeded by Bischofswerda to concentrate at Bautzen. By this move he saved the grand army, which, routed at Dresden, Aug. 27, and forced to retreat behind the Erzgebirge, was now disengaged; Napoleon being compelled to advance with reinforcements toward Bautzen, there to take up the army defeated on the Katzbach, and to offer battle to the Silesian army. During his stay in the S. E. corner of Saxony, on the right

bank of the Elbe, Blücher, by a series of retreats and advances, always shunned battle when offered by Napoleon, but always engaged when encountering single detachments of the French army. Sept. 22, 23, and 24, he executed a flank march on the right of the enemy, advancing by forced marches to the lower Elbe, in the vicinity of the army of the north. Oct. 2, he bridged the Elbe at Elster with pontoons, and on the morning of the 8d his army defiled. This movement, not only bold, but even hazardous, inasmuch as he completely abandoned his lines of communication, was necessitated by supreme political reasons, and led finally to the battle of Leipsic, which, but for Blücher, the slow and over-cautious grand army would never have risked. The army of the north, of which Bernadotte was the commander-in-chief, was about 90,000 strong, and it was, consequently, of the utmost importance that it should advance on Saxony. By means of the close connection which he maintained with Bülow and Wintzingerode, the commanders of the Prussian and Russian corps forming part of the army of the north, Blücher obtained the most convincing proofs of Bernadotte's coquetry with the French, and of the impossibility of inciting him to any activity, so long as he remained alone on a separate theatre of war. Bülow and Wintzingerode declared themselves ready to act in spite of Bernadotte, but to do so they wanted the support of 100,000 men. Hence Blücher's resolution to venture upon his flank march, in which he persisted despite the orders he had received from the sovereigns to draw near to them on the left, toward Bohemia. He was not to be diverted from his purpose through the obstacles which Bernadotte systematically threw in his way, even after the crossing of the Elbe by the Silesian army. Before leaving Bautzen, he had despatched a confidential officer to Bernadotte, to inform him that, since the army of the north was too weak to operate alone on the left bank of the Elbe, he would come with the Silesian army, and cross at Elster on Oct. 8; he therefore invited him to cross the Elbe at the same time, and to advance with him toward Leipsic. Bernadotte not heeding this message, and the enemy occupying Wartenburg opposite Elster, Blücher first dislodged the latter, and then, to protect himself in case Napoleon should fall upon him with his whole strength, began establishing an intrenched encampment from Wartenburg to Bleddin. Thence he pushed forward toward the Mulde. Oct. 7, in an interview with Bernadotte, it was arranged that both armies should march upon Leipsic. On the 9th, while the Silesian army was preparing for this march, Bernadotte, on the news of Napoleon's advance on the road from Meissen, insisted upon retreating behind the Elbe, and only consented to remain on its left bank on condition that Blücher would resolve to cross the Saale in concert with him, in order to take up a posi-

tion behind that river. Although by this movement the Silesian army lost anew its line of communication, Blücher consented, since otherwise the army of the north would have been effectually lost for the allies. Oct. 10, the whole Silesian army stood united with the army of the north on the left bank of the Mulde, the bridges over which were destroyed. Bernadotte now declared a retreat upon Bernburg to have become necessary, and Blücher, with the single view of preventing him from crossing the right bank of the Elbe, yielded again on the condition that Bernadotte should cross the Saale at Wettin and take up a position there. Oct. 11, when his columns were just crossing the high road from Magdeburg to Halle, Blücher being informed that, in spite of his positive promise, Bernadotte had constructed no bridge at Wettin, resolved upon following that high road in forced marches. Napoleon, seeing that the northern and Silesian armies avoided accepting battle, which he had offered them by concentrating at Duben, and knowing that they could not avoid it without retreating across the Elbe; being at the same time aware that he had but 4 days left before he must meet the grand army, and thus be placed between two fires, undertook a march on the right bank of the Elbe toward Wittenberg, in order by this simulated movement to draw the northern and Silesian armies across the Elbe, and then strike a rapid blow on the grand army. Bernadotte, indeed, anxious for his lines of communication with Sweden, gave his army orders to cross without delay to the right bank of the Elbe, by a bridge constructed at Aken, while, on the same day, Oct. 13, he informed Blücher that the emperor Alexander had, for certain important reasons, put him (Blücher) under his orders. He consequently requested him to follow his movements on the right bank of the Elbe with the Silesian army, with the least possible delay. Had Blücher shown less resolution on this occasion and followed the army of the north, the campaign would have been lost, since the Silesian and northern armies, amounting together to about 200,000 men, would not have been present at the battle of Leipsic. He wrote in reply to Bernadotte, that, according to all his information, Napoleon had no intention whatever of removing the theatre of war to the right bank of the Elbe, but only intended to lead them astray. At the same time he conjured Bernadotte to give up his intended movement across the Elbe. Having, meanwhile, again and again solicited the grand army to push forward upon Leipsic, and offered to meet them there, he received at last, Oct. 15, the long-expected invitation. He immediately advanced toward Leipsic, while Bernadotte retreated toward Petersberg. On his march from Halle to Leipsic on Oct. 16, he routed at Möckern the 6th corps of the French army under Marmont, in a hotly contested battle, in which he captured 54 pieces of artillery. Without delay he

sent accounts of the issue of this battle to Bernadotte, who was not present on the 1st day of the battle of Leipsic. On its 2d day, Oct. 17, Blücher dislodged the enemy from the right bank of the Parthe, with the exception of some houses and intrenchments near the Halle gate. On the 18th, at daybreak, he had a conference at Brachenfeld with Bernadotte, who declared he could not attack on the left bank of the Parthe unless Blücher gave him for that day 30,000 men of the Silesian army. Keeping the interest of the whole exclusively in view, Blücher consented without hesitation, but on the condition of remaining himself with these 30,000 men, and thus securing their vigorous cooperation in the attack. After the final victory of Oct. 19, and during the whole of Napoleon's retreat from Leipsic to the Rhine, Blücher alone gave him an earnest pursuit. While, on Oct. 19, the generals in command met the sovereigns in the market-place of Leipsic, and precious time was spent in mutual compliments, his Silesian army was already marching in pursuit of the enemy to Lützen. On his march from Lützen to Weissenberg, Prince William of Prussia overtook him, to deliver to him the commission of a Prussian field-marshal. The allied sovereigns had allowed Napoleon to gain a start which could never be recovered, but from Eisenach onward, Blücher found himself every afternoon in the room which Napoleon had left in the morning. When about to march upon Cologne, there to cross the Rhine, he was recalled and ordered to blockade Mantz on its left bank; his rapid pursuit as far as the Rhine having broken up the confederation of the Rhine, and disengaged its troops from the French divisions in which they were still enrolled. While the head-quarters of the Silesian army was established at Höchst, the grand army marched up the upper Rhine. Thus ended the campaign of 1813, whose success was entirely due to Blücher's bold enterprise and iron energy.—The allies were divided as to the plan of operations now to be followed; the one party proposing to stay on the Rhine, and there to take up a defensive position; the other to cross the Rhine and march upon Paris. After much wavering on the part of the sovereigns, Blücher and his friends prevailed, and the resolution was adopted to advance upon Paris in a concentric movement, the grand army being to start from Switzerland, Bulow from Holland, and Blücher, with the Silesian army, from the middle Rhine. For the new campaign, 3 additional corps were made over to Blücher, viz., Kleist's, the elector of Hesse's, and the duke of Saxe-Coburg's. Leaving part of Langeron's corps to invest Mantz, and the new reinforcements to follow as a second division, Blücher crossed the Rhine Jan. 1, 1814, on 3 points, at Mannheim, Caub, and Coblenz, drove Marmont beyond the Voeges and the Sarre, in the valley of the Moselle, posted York's corps between the fortresses of the Moselle, and with a force of 28,000 men, con-

sisting of Sacken's corps and a division of Langeron's corps, proceeded by Vaucouleurs and Joinville to Brienne, in order to effect his junction with the grand army by his left. At Brienne, Jan. 29, he was attacked by Napoleon, whose forces mustered about 40,000, while York's corps was still detached from the Silesian army, and the grand army, 110,000 strong, had only reached Chaumont. Blücher had consequently to face the greatly superior forces of Napoleon, but the latter neither attacked him with his usual vigor, nor hindered his retreat to Trannes, save by some cavalry skirmishes. Having taken possession of Brienne, placed part of his troops in its vicinity, and occupied Dienville, La Rothière, and Chammenil, with 8 different corps, Napoleon would, on Jan. 30, have been able to fall upon Blücher with superior numbers, as the latter was still awaiting his reinforcements. Napoleon, however, kept up a passive attitude, while the grand army was concentrating by Bar-sur-Aube, and detachments of it were strengthening Blücher's right flank. The emperor's inactivity is explained by the hopes from the negotiations of the peace congress of Châtillon, which he had contrived to start, and through the means of which he expected to gain time. In fact, after the junction of the Silesian army with the grand army had been effected, the diplomatic party insisted that during the deliberations of the peace congress the war should be carried on as a feint only. Prince Schwartzberg sent an officer to Blücher to procure his acquiescence, but Blücher dismissed him with this answer: "We must go to Paris. Napoleon has paid his visits to all the capitals of Europe; should we be less polite? In short, he must descend from the throne, and until he is hurled from it we shall have no rest." He urged the great advantages of the allies attacking Napoleon near Brienne, before he could bring up the remainder of his troops, and offered himself to make the attack, if he were only strengthened in York's absence. The consideration that the army could not subsist in the barren valley of the Aube, and must retreat if it did not attack, caused his advice to prevail. The battle was decided upon, but Prince Schwartzberg, instead of bearing upon the enemy with the united force at hand, only lent Blücher the corps of the crown prince of Würtemberg (40,000 men), that of Gyulay (12,000), and that of Wrede (12,000). Napoleon, on his part, neither knew nor suspected any thing of the arrival of the grand army. When about 1 o'clock, Feb. 1, it was announced to him that Blücher was advancing, he would not believe it. Having made sure of the fact, he mounted his horse with the idea of avoiding the battle, and gave Berthier orders to this effect. When, however, between old Brienne and Rothière, he reached the young guard, who had got under arms on hearing the approaching cannonade, he was received with such enthusiasm that he thought fit to improve the opportunity, and exclaimed, "*L'artillerie en avant!*" Thus,

about 4 o'clock, the affair of La Rothière commenced in earnest. At the first reverse, however, Napoleon no longer took any personal part in the battle. His infantry having thrown itself into the village of La Rothière, the combat was long and obstinate, and Blücher was even obliged to bring up his reserve. The French were not dislodged from the village till 11 o'clock at night, when Napoleon ordered the retreat of his army, which had lost 4,000 or 5,000 men in killed and wounded, 2,500 prisoners, and 58 cannon. If the allies, who were then only 6 days' march from Paris, had vigorously pushed on, Napoleon must have succumbed before their immensely superior numbers; but the sovereigns, still apprehensive of cutting Napoleon off from making his peace at the congress of Châtillon, allowed Prince Schwartzberg, the commander-in-chief of the grand army, to seize upon every pretext for shunning a decisive action. While Napoleon ordered Marmont to return on the right bank of the Aube toward Ramern, and himself retired by a flank march upon Troyes, the allied army split into 2 armies, the grand army advancing slowly upon Troyes, and the Silesian army marching to the Marne, where Blücher knew he would find York, beside part of Langeron's and Kleist's corps, so that his aggregate forces would be swelled to about 50,000 men. The plan was for him to pursue Marshal Macdonald, who had meanwhile appeared on the lower Marne, to Paris, while Schwartzberg was to keep in check the French main army on the Seine. Napoleon, however, seeing that the allies did not know how to use their victory, and sure of returning to the Seine before the grand army could have advanced far in the direction of Paris, resolved to fall upon the weaker Silesian army. Consequently, he left 20,000 men under Victor and Oudinot in face of the 100,000 men of the grand army, advanced with 40,000 men, the corps of Mortier and Ney, in the direction of the Marne, took up Marmont's corps at Nogent, and on Feb. 9 arrived with these united forces at Sézanne. Meanwhile Blücher had proceeded by St. Ouen and Sommepeux on the little road leading to Paris, and established, Feb. 9, his headquarters at the little town of Vertus. The disposition of his forces was this: about 10,000 men at his head-quarters; 18,000, under York, posted between Dormans and Château Thierry, in pursuit of Macdonald, who was already on the great post road leading to Paris from Épernay; 80,000 under Sacken, between Montmirail and La Ferté-Sous-Jouarre, destined to prevent the intended junction of Sebastiani's cavalry with Macdonald, and to cut off the passage of the latter at La Ferté-Sous-Jouarre; the Russian general, Olsuvieff, cantoned with 5,000 men at Champaubert. This faulty distribution, by which the Silesian army was drawn up in a very extended position, *en échelon*, resulted from the contradictory motives which actuated Blücher. On the one hand, he desired to cut off Macdonald, and prevent his junction with Sebas-

tiani's cavalry; on the other hand, to take up the corps of Kleist and Kapzewitch, who were advancing from Chalons, and expected to unite with him on the 9th and 10th. The one motive kept him back, the other pushed him on. Feb. 9, Napoleon fell upon Olsuvieff, at Champaubert, and routed him. Blücher, with Kleist and Kapzewitch, who had meanwhile arrived, but without the greater part of their cavalry, advanced against Marmont, despatched by Napoleon, and followed him in his retreat upon La Fère Champenoise, but on the news of Olsuvieff's discomfiture, returned in the same night, with his 2 corps, to Bergères, there to cover the road to Chalons. After a successful combat on the 10th, Sacken had driven Macdonald across the Marne at Trilport, but hearing on the night of the same day of Napoleon's march to Champaubert, hastened back on the 11th toward Montmirail. Before reaching it he was, at Vieux Maisons, obliged to form against the emperor, coming from Montmirail to meet him. Beaten with great loss before York could unite with him, the two generals effected their junction at Viffort, and retreated, Feb. 12, to Château Thierry, where York had to stand a very damaging rear-guard engagement, and withdrew thence to Oulchy-la-Ville. Having ordered Mortier to pursue York and Sacken on the road of Fismes, Napoleon remained on the 13th at Château Thierry. Uncertain as to the whereabouts of York and Sacken and the success of their engagements, Blücher had, from Bergères, during the 11th and 12th, quietly watched Marmont posted opposite him at Etoges. When informed, on the 13th, of the defeat of his generals, and supposing Napoleon to have moved off in search of the grand army, he gave way to the temptation of striking a parting blow upon Marmont, whom he considered Napoleon's rear-guard. Advancing on Champaubert, he pushed Marmont to Montmirail, where the latter was joined on the 14th by Napoleon, who now turned against Blücher, met him at noon at Veauchamps, 20,000 strong, but almost without cavalry, attacked him, turned his columns with cavalry, and threw him back with great loss on Champaubert. During its retreat from the latter place, the Silesian army might have reached Etoges before it grew dark, without any considerable loss, if Blücher had not taken pleasure in the deliberate slowness of the retrograde movement. Thus he was attacked during the whole of his march, and one detachment of his forces, the division of Prince Augustus of Prussen, was again beset from the side streets of Etoges, on its passage through that town. About midnight Blücher reached his camp at Bergères, broke up, after some hours' rest, for Chalons, arrived there about noon, Feb. 15, and was joined by York's and Sacken's forces on the 16th and 17th. The different affairs at Champaubert, Montmirail, Château Thierry, Veauchamps, and Etoges, had cost him 15,000 men and 27 guns; Gneisenau and Mülling being

alone responsible for the strategical faults which led to these disasters. Leaving Marmont and Mortier to front Blücher, Napoleon, with Ney, returned in forced marches to the Seine, where Schwartzberg had driven back Victor and Oudinot, who had retreated across the Yères, and there taken up 12,000 men under Macdonald, and some reinforcements from Spain. On the 16th they were surprised by the sudden arrival of Napoleon, followed on the 17th by his troops. After his junction with the marshals he hastened against Schwartzberg, whom he found posted in an extended triangle, having for its summits Nogent, Montereau, and Sens. The generals under his command, Wittgenstein, Wrede, and the crown prince of Würtemberg, being successively attacked and routed by Napoleon, Prince Schwartzberg took to his heels, retreated toward Troyes, and sent word to Blücher to join him, so that they might in concert give battle on the Seine. Blücher, meanwhile, strengthened by new reinforcements, immediately followed this call, and entered Méry Feb. 21, and waited there the whole of the 22d for the dispositions of the promised battle. He learned in the evening that an application for a truce had been made to Napoleon, through Prince Lichtenstein, who had met with a flat refusal. Instantly despatching a confidential officer to Troyes, he conjured Prince Schwartzberg to give battle, and even offered to give it alone, if the grand army would only form a reserve; but Schwartzberg, still more frightened by the news that Angereau had driven Gen. Bubna back into Switzerland, had already ordered the retreat upon Langres. Blücher understood at once that a retreat upon Langres would lead to a retreat beyond the Rhine; and, in order to draw Napoleon off from the pursuit of the dispirited grand army, resolved upon again marching straight in the direction of Paris, toward the Marne, where he could now expect to assemble an army of 100,000 men, Wintzingerode having arrived with about 25,000 men in the vicinity of Rheims, Bülow at Laon with 16,000 men, the remainder of Kleist's corps being expected from Erfurt, and the rest of Langeron's corps, under St. Priest, from Metz. It was this second separation on the part of Blücher from the grand army, that turned the scale against Napoleon. If the latter had followed the retreating grand army instead of the advancing Silesian one, the campaign would have been lost for the allies. The passage of the Aube before Napoleon had followed him, the only difficult point in Blücher's advance, he effected by constructing a pontoon bridge at Anglure on Feb. 24. Napoleon, commanding Oudinot and Macdonald, with about 25,000 men, to follow the grand army, left Herbisse on the 26th, together with Ney and Victor, in pursuit of the Silesian army. On the advice sent by Blücher, that the grand army had now but the 2 marshals before it, Schwartzberg stopped his retreat, took heart, turned round

upon Oudinot and Macdonald, and beat them on the 27th and 28th. It was Blücher's intention to concentrate his army at some point as near as possible to Paris. Marmont, with his troops, was still posted at Sézanne, while Mortier was at Château Thierry. On Blücher's advance, Marmont retreated, united on the 26th with Mortier at La Ferté-Sous-Jouarre, thence to retire with the latter upon Meaux. Blücher's attempt, during 2 days, to cross the Ourcq, and, with a strongly advanced front, to force the 2 marshals to battle, having failed, he was now obliged to march on the right bank of the Ourcq. He reached Oulchy-le-Château March 2, learned in the morning of the 3d the capitulation of Soissons, which had been effected by Bülow and Wintzingerode, and, in the course of the same day, crossed the Aisne, and concentrated his whole army at Soissons. Napoleon, who had crossed the Marne at La Ferté-Sous-Jouarre, 2 forced marches behind Blücher, advanced in the direction of Château Thierry and Fismes, and, having passed the Vesle, crossed the Aisne at Berry-au-Bac, March 6, after the recapture of Rheims by a detachment of his army. Blücher originally intended to offer battle behind the Aisne, on Napoleon's passage of that river, and had drawn up his troops for that purpose. When he became aware that Napoleon took the direction of Fismes and Berry-au-Bac, in order to pass the Silesian army by the left, he decided upon attacking him from Craone on the flank, in an oblique position, immediately after his debouching from Berry-au-Bac, so that Napoleon would have been forced to give battle with a defile in his rear. Having already posted his forces, with the right wing on the Aisne, with the left on the Lette, half way from Soissons to Craone, he resigned this excellent plan on making sure that Napoleon had, on the 6th, been allowed by Wintzingerode to pass Berry-au-Bac unmolested, and had even pushed a detachment on the road to Laon. He now thought it necessary to accept no decisive battle except at Laon. To delay Napoleon, who, by Corbeny, on the causeway from Rheims, could reach Laon as soon as the Silesian army from Craone, Blücher posted the corps of Woronzoff between the Aisne and the Lette, on the strong plateau of Craone, while he despatched 10,000 horse under Wintzingerode, to push on by Fétieux toward Corbeny, with the order to fall upon the right flank and rear of Napoleon, as soon as the latter should be engaged in attacking Woronzoff. Wintzingerode failing to execute the manœuvre intrusted to him, Napoleon drove Woronzoff from the plateau on the 7th, but himself lost 8,000 men, while Woronzoff escaped with the loss of 4,700, and proved able to effect his retreat in good order. On the 8th, Blücher had concentrated his troops at Laon, where the battle must decide the fate of both armies. Apart from his numerical superiority, the vast plain before Laon was peculiarly adapted for deploying the 20,000 horse of the Silesian army,

while Laon itself, situated on the plateau of a detached hill, which has on every side a fall of 12, 16, 20 to 30 degrees, and at the foot of which lie 4 villages, offered great advantages for the defence as well as the attack. On that day, the left French wing, led by Napoleon himself, was repulsed, while the right wing, under Marmont, surprised in its bivouacs at nightfall, was so completely worsted, that the marshal could not bring his troops to a halt before reaching Fismes. Napoleon, completely isolated with his wing, numbering 35,000 men only, and cooped up in a bad position, must have yielded before far superior numbers flushed with victory. Yet on the following morning, a fever attack and an inflammation of the eyes disabled Blücher, while Napoleon yet remained in a provocative attitude, in the same position, which so far intimidated the men who now directed the operations, that they not only stopped the advance of their own troops which had already begun, but allowed Napoleon to quietly retire at nightfall to Soissons. Still the battle of Laon had broken his forces, physically and morally. He tried in vain by the sudden capture, on March 18, of Rheims, which had fallen into the hands of St. Priest, to restore himself. So fully was his situation now understood, that when he advanced, on the 17th and 18th, on Arcis-sur-Aube, against the grand army, Schwartzberg himself, although but 80,000 strong against the 25,000 under Napoleon, dared to stand and accept a battle, which lasted through the 20th and 21st. When Napoleon broke it off, the grand army followed him up to Vitry, and united in his rear with the Silesian army. In his despair, Napoleon took a last refuge in a retreat upon St. Dizier, pretending thus to endanger, with his handful of men, the enormous army of the allies, by cutting off its main line of communication and retreat between Langres and Chaumont; a movement replied to on the part of the allies by their onward march to Paris. On March 30 took place the battle before Paris, in which the Silesian army stormed Montmartre. Though Blücher had not recovered since the battle of Laon, he still appeared at the battle for a short time, on horseback, with a shade over his eyes, but, after the capitulation of Paris, laid down his command, the pretext being his sickness, and the real cause the clashing of his open-mouthed hatred against the French with the diplomatic attitude which the allied sovereigns thought fit to exhibit. Thus he entered Paris, March 31, in the capacity of a private individual. During the whole campaign of 1814, he alone among the allied army represented the principle of the offensive. By the battle of La Rothière he baffled the Châtillon pacificators; by his resolution at Méry he saved the allies from a ruinous retreat; and by the battle of Laon he decided the first capitulation of Paris.—After the first peace of Paris he accompanied the emperor Alexander and King Frederic William of Prussia on their visit to England, where he was fêted as

the hero of the day. All the military orders of Europe were showered upon him; the king of Prussia created for him the order of the iron cross; the prince regent of England gave him his portrait, and the university of Oxford the academical degree of LL. D. In 1815 he again decided the final campaign against Napoleon. After the disastrous battle of Ligny, June 16, though now 73 years of age, he prevailed upon his routed army to form anew and march on the heels of their victor, so as to be able to appear in the evening of June 18 on the battle field of Waterloo, an exploit unprecedented in the history of war. His pursuit, after the battle of Waterloo, of the French fugitives, from Waterloo to Paris, possesses one parallel only, in Napoleon's equally remarkable pursuit of the Prussians from Jena to Stettin. He now entered Paris at the head of his army, and even had Müffling, his quartermaster-general, installed as the military governor-general of Paris. He insisted upon Napoleon's being shot, the bridge of Jena blown up, and the restitution to their original owners of the treasures plundered by the French in the different capitals of Europe. His first wish was baffled by Wellington, and the second by the allied sovereigns, while the last was realized. He remained at Paris 8 months, very frequently attending the gambling tables for *rouge-et-noir*. On the anniversary of the battle on the Katzbach, he paid a visit to Rostock, his native place, where the inhabitants united to raise a public monument in his honor. On the occurrence of his death the whole Prussian army went into mourning for 8 days. *Le vieux diable*, as he was nicknamed by Napoleon, "Marshal Forwards," as he was styled by the Russians of the Silesian army, was essentially a general of cavalry. In this speciality he excelled, because it required tactical acquirements only, but no strategical knowledge. Participating to the highest degree in the popular hatred against Napoleon and the French, he was popular with the multitude for his plebeian passions, his gross common sense, the vulgarity of his manners, and the coarseness of his speech, to which, however, he knew, on fit occasions, how to impart a touch of fiery eloquence. He was the model of a soldier. Setting an example as the bravest in battle and the most indefatigable in exertion; exercising a fascinating influence on the common soldier; joining to his rash bravery a sagacious appreciation of the ground, a quick resolution in difficult situations, stubbornness in defence equal to his energy in the attack, with sufficient intelligence to find for himself the right course in simpler combinations, and to rely upon Gneisenau in those which were more intricate, he was the true general for the military operations of 1813-'15, which bore the character half of regular and half of insurrectionary warfare.

BLUDOFF, DMITRI, count, president of the academy of sciences at St. Petersburg, president of the legislative department in the council of the empire, senator, secretary of state,

and member of various other supreme government boards, was born in Moscow about 1788, from a family tracing its origin directly to Blud, a companion of Ruric, the Variagian, founder in the 9th century of the grand dukedoms of Novgorod and Kiev. He completed his studies at the university at Moscow, and entered early into the diplomatic service. He was long employed in London, Stockholm, and Vienna, but was afterward transferred to the domestic administration, and at the advent of Nicholas belonged, with Dashkoff and Ouwaroff, to the triad which Karamsin, the Russian historian, then a kind of patriarch in the public opinion, recommended, at the request of the new emperor, as the fittest men to carry out his reformatory ideas. Bludoff was created secretary of the interior, and as such was a member of the board of inquiry into the insurrection of 1826. He instilled new and healthier activity into his branch of administration, contending on every occasion with the deeply rooted abuses and malversations. In 1838 he succeeded Dashkoff as secretary of the department of justice, and subsequently became president of the legislative department in the council of the empire. As such he put the last hand to the establishment and publication of the code (*Zvod Zakonoff*) of civil and criminal laws. In 1846-'7 he was sent by the emperor Nicholas as special and extraordinary plenipotentiary to Rome, to conclude there a concordat concerning the Roman bishoprics in various Russian provinces, and other administrative-religious questions then in dispute. In 1842 he was created count. Bludoff is a man of extensive and varied information, of great simplicity, goodness of heart, and benevolence in his relations with his subordinates. He is one of the very few men in the public service of Russia who are wholly unconcerned with regard to their personal interests, having for his motto that one cannot at the same time serve God, the czar, his country, and mammon. His political convictions are those of an enlightened and humane absolutist, of a fervent panslavist and a thorough nationalist; thus he belongs to what is commonly called the old Russian party. He prefers the development of genuine national germs to the importation and engrafting of foreign notions. He pays, however, due deference to the multifarious mental progress of the west of Europe; with which he considers it the first duty of every enlightened and patriotic Russian to be familiar.

BLUE, one of the 7 primary colors. Like the green of the forest and the field, nature appears to have adopted the color for the sea and sky with reference to its soft and pleasing effect upon the eye. In these, its various shades are seen in their highest perfection, and they are also most brilliantly displayed in the sapphire and the turquoise. In the arts, it is derived for dyes from the products of the vegetable, animal, and mineral kingdoms. Indigo is the most common vegetable material for producing it. A

great variety of berries are also used, the juices of which become blue by the addition of alkali or salts of copper. Among mineral substances, cobalt is the most remarkable for the brilliant blue produced by its salts. Cobalt blue is used for coloring glass and porcelain. Mountain blue is derived from carbonate of copper. Bremen blue or verditer is a greenish blue color, obtained from copper mixed with carbonate of lime. Prussian blue, used for chemical purposes and as a pigment, is obtained from horns, hoofs, or dried blood; other blues are obtained from combinations of molybdenum and oxide of tin. Ultramarine is a beautiful blue pigment prepared from the mineral lapis lazuli, which until recently has defied all imitation.

BLUE, PRUSSIAN. See PRUSSIAN BLUE.

BLUE EARTH, a south-western county of Minnesota, bordering on Iowa, bounded on the N. E. by the Minnesota river, and on the W. by the Missouri. Its name is derived from the Blue Earth, or Mankato river, by which it is intersected. Capital, Mankato.

BLUE LAWS. This term is sometimes applied to the early enactments of several of the New England states, but is more frequently limited to the laws of New Haven colony. The origin of the term is not exactly known. Various conjectures have been made, but the most probable derivation is that given by Professor Kingsley, who thinks the epithet "blue" was applied to any one who (in the times of Charles II.) looked with disapprobation on the licentiousness of the times. Thus, in Hudibras,

For his religion, it was fit
To match his learning and his wit;
'Twas Presbyterian true blue.

That this epithet should find its way to the colonies was a matter of course. It was here applied not only to persons, but to the customs, institutions, and laws of the Puritans, by those who wished to render the prevailing system ridiculous. Hence, probably, a belief with some that a distinct system of laws, known as the blue laws, must somewhere have had a local habitation. The existence of such a code of blue laws is fully disproved. The only authority in its favor is Peters, who is notoriously untrustworthy. The traditions upon this subject, from which Peters framed his stories, undoubtedly arose from the fact that the early settlers of New Haven were uncommonly strict in their application of the "general rules of righteousness." Judge Smith, in his continuation of the history of New York, published in "New York Historical Collections," vol. iv., gives evidence against the existence of the blue laws, which is particularly valuable, as it was put on record some 15 years before Peters's history was published. He writes: "Few there are who speak of the blue laws (a title of the origin of which the author is ignorant), who do not imagine they form a code of rules drawn up for future conduct, by an enthusiastic precise set of religionists; and if the inventions of wits, humorists, and buffoons were to be credited, they

must consist of many large volumes. The author had the curiosity to resort to them when the commissioners met at New Haven for adjusting a partition line between New York and Massachusetts in 1787; and a parchment covered book of demi-royal paper was handed him for the laws asked for, as the only volume in the office passing under this odd title. It contains the memorials of the first establishment of the colony, which consisted of persons who had wandered beyond the limits of the old charter of Massachusetts Bay, and who, as yet unauthorized by the crown to set up any civil government in due form of law, resolved to conduct themselves by the Bible. As a necessary consequence, the judges they chose took up an authority which every religious man exercises over his own children and domestics. Hence their attention to the morals of the people in instances with which the civil magistrate can never intermeddle in a regular well-policed constitution, because to preserve liberty they are recognizable only by parental authority." "The good men and good wives were admonished and fined for liberties daily corrected, but never made criminal by the laws of large and well-poised communities; and so far is the common idea of the blue laws being a collection of rules from being true, that they are only records of convictions consonant in the judgment of the magistrates to the word of God and the dictates of reason."

BLUE LICK SPRINGS, a village of Nicholas co., Ky., 70 miles N. E. of Frankfort, celebrated for its mineral waters, which form an article of considerable traffic in various parts of the United States.

BLUE MONDAY, originally called so from a fashion, prevalent in the 16th century, of decorating the churches, on the Monday preceding Lent, with blue colors. The custom of making a holiday of this particular Monday, especially as far as those were concerned whose vocations compelled them to work on the Sabbath, was subsequently transferred to all Mondays, indiscriminately, and, although the excesses produced by the celebration of the day resulted in stringent enactments on the subject, and generally in the abolition of the custom, it is, however, not yet entirely extinct in Europe, and, for a portion of the working classes, the blue Monday still carries with it promises of enjoyment and relaxation from labor. According to other traditions, the name originated from the revels during the Monday holiday, which generally left blue marks upon the faces of quarrelsome persons.

BLUE MOUNTAINS, the central mountain chain of the island of Jamaica. It extends from east to west through the centre of the island, with offsets covering its eastern extremity. These mountains are remarkable for their steep declivities and sharp, narrow crests, which are sometimes only a few yards across. They cover the greater part of the island; the level portions being estimated at not more than

1/8th part of the whole. The valleys are deep longitudinal depressions, covered, as are also the sides of the mountains, with dense vegetation and stately forests. In the great earthquake of 1692, these mountains were terribly shattered and rent.

BLUE RIDGE, the most eastern of the principal ridges of the Appalachian chain of mountains. It is the continuation south of the Potomac of the same great ridge which, in Pennsylvania and Maryland, is known as the South mountain. It retains the name of Blue Ridge till it crosses the James river, from which, to the line of North Carolina, its continuation is called the Alleghany mountain. Through North Carolina into Tennessee, it again receives the name of Blue Ridge. Its geological formations and mineral products have been noticed under the head of **APPALACHIAN MOUNTAINS**.

BLUE RIVER, rising in Henry co., in the eastern part of the state of Indiana, takes a S. W. course, and joins Sugar creek, in Johnson co., after which it takes the name of Driftwood Fork, or East Fork of White river. Above Sugar creek it is from 80 to 60 yards wide, and affords excellent water power. The towns of Shelbyville and Newcastle are on its banks.

BLUE STOCKINGS, a title which originated in England in the time of Dr. Johnson for ladies who cultivated learned conversation. Boswell relates that in 1781 it was much the fashion for ladies to form evening assemblies where they might participate in talk with literary and ingenious men. One of the most eminent talkers on these occasions was a Mr. Stillingfleet, who always wore blue stockings, and his absence at any time was so regretted that it used to be said: "We can do nothing without the blue stockings." The title was by degrees transferred, first to the clubs of this kind, and then to the ladies who attended them. It soon became a general appellation for pedantic or ridiculously literary ladies. One of the most famous of these clubs was that which met at Mrs. Montagu's, which was sometimes honored by the presence of Dr. Johnson, and the principal members of which have been sketched and eulogized by Hannah More, in her poem entitled the "Bas Bleu."

BLUE VITRIOL, called also **BLUE STONE**, the salt, sulphate of copper, composed of sulphuric acid, oxide of copper, and water. It is a natural product of some mines of copper ore, and is also largely prepared for economical purposes. See **COPPER, SULPHATE OF**.

BLUEBIRD (*Sialia Wilsonii*, Swainson), a North American species of the order *passeres*, tribe *denirostres*, and family *lusciniada*. This well-known species is about 7 inches long, and 10 inches in extent of wings; the bill is black, about 1/4 an inch long, and nearly straight; the plumage of the male is soft and blended, above of a bright azure blue, below yellowish brown, and the belly white; the female has the upper parts of a hue approaching leaden, with the rest like the male, though duller; the young have

the head and back brownish. It is found in all parts of the United States, excepting perhaps some of the new Pacific territories; it is very sprightly and familiar, and is always a welcome visitor. The nest is made either in a box prepared for it, or in any convenient hole in a tree; the eggs are from 4 to 6, of a pale blue color. The food consists of various kinds of insects and spiders, and also the ripe fruits of the south. Its song is a soft agreeable warble, becoming plaintive as winter approaches, at which season most of them repair to the southern states. Audubon says that this species often reminded him of the robin redbreast of Europe, in its form and habits. There are 2 other species, much resembling the above, *S. Mexicana*, Swains, and *S. arctica*, Swains. The former, the western bluebird, occupies the same localities on the Pacific coast that the *S. Wilsonii* does on the Atlantic; its color approaches ultramarine, with a chestnut band across the back, the throat blue, and the fore part of the breast red. The *S. arctica* is found about Columbia river and Fort Vancouver; the color is a light smalt or greenish blue above, and of a paler tint of the same below anteriorly. The bill and wings are somewhat longer in the last 2 than in the first species. The bluebird is one of the earliest of our spring songsters, and does good service to the agriculturist in destroying beetles, grasshoppers, grubs, wire-worms, and other similar pests; it rarely injures any of our garden fruits, preferring those of the sumach and the wild cherry.

BLUEFIELDS, or BLEWFIELDS, a river and town of the Mosquito territory, Central America. The river is several hundred miles long, is navigable for 80 miles, and empties into an inlet of the Caribbean sea. On an eminence at the mouth of the river stands the town of the same name. It is the residence of the king of the Mosquito country, and has a good harbor.

BLUEFISH (*temnodon saltator*, Cuv.), an acanthopterygian fish of the family of *scombridae*, called also "skip-jack," and sometimes "horse-mackerel;" both of the latter terms are applied to other scomberoid fishes, and the last especially, on the New England coast, to a species of tunny. All the upper part of the body is of a bluish color, the lower part of sides and abdomen whitish, a large black spot at the base of pectoral fins; the jaws are armed with prominent, sharp, and lacinated teeth, the lower with 1 row, the upper with a second posterior row of small ones; the base of the tongue, vomer, and palatic bones are also crowded with very small teeth; the operculum terminates in 2 points, not spines, the lateral line beginning just above its posterior angle, and, curving with the body, terminating at the base of the caudal fin; the fins are covered with scales. It arrives on the coast of the middle states early in the spring, accompanying the weakfish (*otolithus regalis*, Cuv.) in its migrations, and feeding principally upon it; it is not uncommon in Massachusetts bay in the

summer months, where it is often seen chasing the schools of menhaden and mackerel, jumping out of water, and so hotly pursuing its prey as to drive large numbers of them upon the beaches. The size varies from 1 to 8 feet in length, the weight from 5 to 14 lbs.; the former being the ordinary weight of those seen in the market. It is one of the most swift, strong, and voracious of fishes; they will bite eagerly at any object drawn rapidly through the water, and advantage is taken of this to catch them by trolling in sail-boats; so sharp are their teeth that it is necessary to wire the line for a short distance above the hook or spoon. It is so terrible a foe to the mackerel, that the scarcity of the latter fish on the New England coast in 1857 was attributed by the fishermen mainly to its presence; considerable numbers were caught in Massachusetts bay during that summer, and many from the rock-bound beaches of Cohasset and Scituate. It generally swims near the surface. Toward the latter part of summer it is most excellent eating. It runs up the mouth of rivers even to quite fresh water, being taken in the Hudson as high up as Sing-Sing, in the Delaware at Philadelphia, and in the Potomac as far up as Aquia creek. It ranges far along the coasts of North and South America, and, in the opinion of Valenciennes, inhabits, as a single species, both oceans.

BLUEING OF METALS, the process of giving a blue color to metallic substances by heat. Iron, when heated, becomes first of a light, then of a darker gold color, and finally blue. Steel heated to redness and suddenly cooled, is rendered hard and brittle. It is restored to any degree of softness, by heating it up to certain temperatures and allowing it to cool slowly. These temperatures are precisely indicated by the color of the film of oxide which forms upon its surface. At 480° F. it is straw yellow of the very hard temper suitable for lancets. At higher temperatures it appears successively a golden yellow, then brown, purple, blue, and finally green. Pale blue at 550° is the temper for swords and watch springs. The common shade of blue, at 560°, is the temper for fine saws and dirks. Deep blue, at 600°, is the soft quality of steel for large saws.

BLUET D'ARBÈRES, BERNARD, a French fool by profession, when such a profession existed, born about 1560, of a peasant family, died in 1606. During his boyhood he was a shepherd, afterward a cartwright, and then a fool to the family of a Savoyard nobleman. At the age of 34 he went to Paris, assumed the title of *comte de Permission* and *chevalier des liques des XIII. cantons Suisses*. He wrote eulogies for the great, on whose bounty he lived, particularly on that of Henry IV., and afterward wrote prophecies for the people. His works were collected into 173 books, of which about 180 have come down to us. At the McCarthy sale, in 1816, a copy of Bluet was sold for 500 francs. Fifteen years later, it was sold in England for £20 sterling. It is said that when the

plague of 1606 ravaged Paris, Bluet gave out that his total abstinence from food for 9 days would save the city. He died on the 6th day.

BLUFFS, a term of American origin, synonymous with cliffs. It has long been used to designate the high cliffs met with along the Mississippi river; particularly those abrupt banks of loam on its eastern side below the mouth of the Ohio. These are continually washed and undermined by the action of the river, while the opposite side, rising more gently back from the river, is but slightly washed by its waters. On the south shore of Lake Superior, near the Pictured Rocks, is a most remarkable bluff of loose, blowing sand, which rises so steeply from the edge of the water to the height of 200 feet, that one would in vain endeavor to ascend it. The waves and the winds beat against it from the north, and keep its materials continually in motion; but more sand appears to be always supplied to replace that which is borne away.

BLUHME, CHRISTIAN ALBERT, a Danish statesman of the present day, born in Copenhagen, Dec. 27, 1794. Employed in the public service of his country since 1820, he officiated as minister of commerce from March to Nov. 1848, as chief administrator of the Sound duties in 1850, reentered the cabinet as foreign minister in Nov. 1851, and finally, in Jan. 1852, became prime minister. This office he retained until Dec. 1854, when his administration was impeached for an alleged transgression of power in the financial department. The impeachment, however, was finally abandoned by the verdict of the supreme court of Feb. 27, 1856. Mr. Bluhme resumed his post as director of the Sound duties in 1855, and in Jan. 1856 he was appointed president of the Sound duties committee.

BLUM, ROBERT, one of the martyrs of the German revolution, born at Cologne, Nov. 10, 1807, executed in Vienna, Nov. 9, 1848. He was the son of a poor journeyman cooper, who died in 1815, leaving 8 children and a distressed widow, who, in 1816, again married a common lighterman. This second marriage proved unhappy, and the family misery rose to a climax in the famine of 1816-'17. In 1819 young Robert, belonging to the Catholic confession, obtained an employment as mass-servant; then became apprentice to a gilder, then to a girdler, and, according to the German custom, became a travelling journeyman, but was not up to the requirements of his handicraft, and, after a short absence, had to return to Cologne. Here he found occupation in a lantern manufactory, ingratiated himself with his employer, was by him promoted to a place in the counting-house, had to accompany his patron on his journeys through the southern states of Germany, and, in the year 1829-'30, resided with him at Berlin. During this period he endeavored, by assiduous exertion, to procure a sort of encyclopædic knowledge, without however betraying a marked predilection or a signal endowment for any particular science. Summoned, in 1830, to the

military service, to which every Prussian subject is bound, his relations with his protector were broken off. Dismissed from the army after a six weeks' service, and finding his employment gone, he returned again to Cologne, in almost the same circumstances in which he had twice left it. There the misery of his parents, and his own helplessness, induced him to accept, at the hands of Mr. Ringelhardt, the manager of the Cologne theatre, the office of man of all work of the theatre. His connection with the stage, although of a subaltern character, drew his attention to dramatic literature, while the political excitement which the French revolution of July had caused throughout Rhenish Prussia, allowed him to mingle in certain political circles, and to insert poetry in the local papers. In 1831, Ringelhardt, who had meanwhile removed to Leipsic, appointed Blum cashier and secretary of the Leipsic theatre, a post he held until 1847. From 1831 to 1837 he made contributions to the Leipsic family papers, such as the *Comet*, the *Abendzeitung*, &c., and published a "Theatrical Cyclopædia," the "Friend of the Constitution," an almanac entitled *Vorwärts*, &c. His writings are impressed with the stamp of a certain household mediocrity. His later productions were, moreover, spoiled by a superfluity of bad taste. His political activity dates from 1837, when, as the spokesman of a deputation of Leipsic citizens, he handed over a present of honor to 2 opposition members of the Saxon estates. In 1840 he became one of the founders, and in 1841 one of the directors of the Schiller associations, and of the association of German authors. His contributions to the *Sächsische Vaterlandsblätter*, a political journal, made him the most popular journalist of Saxony, and the particular object of government persecution. German catholicism, as it was called, found a warm partisan in him. He founded the German Catholic church at Leipsic, and became its spiritual director in 1845. On Aug. 12, 1845, when an immense meeting of armed citizens and students, assembling before the riflemen's barracks at Leipsic, threatened to storm it in order to revenge the murderous onslaught committed the day before by a company of the riflemen, Blum, by his popular eloquence, persuaded the excited masses not to deviate from legal modes of resistance, and himself took the lead in the proceedings for legal redress. In reward for his exertions, the Saxon government renewed its persecutions against him, which, in 1847, ended in the suppression of the *Vaterlandsblätter*. On the outbreak of the revolution of February, 1848, he became the centre of the liberal party of Saxony, founded the "Fatherland's Association," which soon mustered above 40,000 members, and generally proved an indefatigable agitator. Sent by the city of Leipsic to the "preliminary parliament," he there acted as vice-chairman, and by preventing the secession *en masse* of the opposition, contributed to sustain that body. After

its dissolution, he became a member of the committee it left behind, and afterward of the Frankfort parliament, in which he was the leader of the moderate opposition. His political theory aimed at a republic as the summit of Germany, but as its base the different traditional kingdoms, dukedoms, &c.; since, in his opinion, the latter alone were able to preserve, intact, what he considered a peculiar beauty of German society, the independent development of its different orders. As a speaker he was plausible, rather theatrical, and very popular. When the news of the Vienna insurrection reached Frankfort, he was charged, in company with some other members of the German parliament, to carry to Vienna an address drawn up by the parliamentary opposition. As the spokesman of the deputation, he handed the address to the municipal council of Vienna, Oct. 17, 1848. Having enrolled himself in the ranks of the students' corps, and commanded a barricade during the fight, he sat, after the capture of Vienna by Windischgrätz, quietly conversing in a hotel, when the hotel was surrounded by soldiers, and he himself made prisoner. Placed before a court-martial, and not condescending to deny any of his speeches or acts, he was sentenced to the gallows, a punishment commuted to that of being shot. This execution took place at daybreak, in the Brigittenau.

BLUMENBACH, JOHANN FRIEDRICH, a German naturalist, born at Gotha, May 11, 1752, died at Göttingen, Jan. 22, 1840. His father was engaged in teaching, and his mother, according to Blumenbach's own statement, "had all the virtues which adorn the mother of a family." His love of science was first kindled when he was only 10 years of age, by the accidental sight of a human skeleton, in the house of a physician, the friend of his father; and although other studies claimed a portion of his time, he never after ceased to meditate on osteology, and the relations of the skeleton to the whole organism. He made collections of human skulls and the bones of animals, as a basis for comparative anatomy. At the age of 17, he commenced the study of medicine at Jena, where he remained 3 years, and afterward at Göttingen, where he obtained his degree of doctor of medicine in 1775. On that occasion, he wrote a thesis on the different varieties of the human race, *De Genere Humani Varietate Nativa*, in which he developed the germ of those craniological researches and comparisons, for which he afterward became celebrated. His acquirements were so highly estimated, that he was appointed junior professor of medicine in the following year; and 2 years later, in 1778, regular professor. From 1780 to 1794 he edited a scientific publication, the *Medizinische Bibliothek*, in which he wrote many valuable articles on medicine, physiology, and comparative anatomy. He also obtained a well-merited reputation by the publication of his *Institutiones Physiologicae*, a condensed and well-arranged view of the animal functions; the work ap-

peared in 1787, and during a period of 84 years, from 1787 to 1821, went through many editions in Germany, where it was the general text book for science in the schools. This work was translated into many foreign languages. It was rendered into English by Dr. Caldwell, and published in America in 1798, and in London, by Elliotson, in 1817. Blumenbach became still more extensively known by his manual of comparative anatomy and physiology, of which 8 editions were published in Germany, from the time of its first appearance, in 1804, up to 1824. It was translated into English in 1809, by the eminent surgeon Lawrence; and again, with the latest additions and improvements, by Coulson, in 1827. Though less elaborate than the works of Cuvier and Carus, this work of Blumenbach will always be valued for the accuracy of his own observations, and the just appreciation of the labors of his predecessors. Blumenbach was the first who placed comparative anatomy on a truly scientific basis. In 1785, long before Cuvier's time, he instituted the method of comparing different varieties of human skeletons, and skeletons of animals. Camper had only compared the facial angles of the skulls of Europeans, negroes, and orang-outangs; Blumenbach perceived the insufficiency of these few points of comparison, and introduced a general survey of comparative anatomy. He insisted on the necessity of comparing the whole cranium and face, to distinguish the varieties of the human race; and his numerous observations were published in the *Collectio Craniorum Diversorum Gentium*, published at Göttingen, in 7 decades, from 1790 to 1828, in 4to. with 80 figures, and in the decade VIII., or *Nova Pentas Collectionis Suae Craniorum*, which was joined to the work in the latter year. Blumenbach wrote many works of scientific merit; but his theory of generation, on the hypothesis of a *nus formativus*, has been deemed as futile as the "preëxistent germs" of Leibnitz; and yet it does not seem devoid of rationality on close examination. It is not clear enough, however, to command assent, without more proof than he has given of its probable reality.—The greatest part of Blumenbach's life was passed at Göttingen, and, like the life of other scientific men devoted to the study of nature and her laws, was not much chequered with events of a romantic or exciting nature. In 1788 he visited Switzerland, and gave a curious medical topography of that country in his *Bibliothek*. In 1788 he was in England, and also in 1792. The prince regent, in 1816, conferred on him the office of physician to the royal family in Hanover; and he made him knight-companion of the Guelphic order in 1821. The royal academy of Paris adopted him as a member in 1831. Blumenbach was highly honored and appreciated in all the civilized nations of Europe, as well as in Germany, his native land. In 1776 he was appointed conservator of the museum of natural history at Göttingen, which he enriched by numerous collections; and 2 years

later, he was named professor of physiology and comparative anatomy. In early youth he was the friend of Sommerring, who became celebrated also as an eminent anatomist; and during half a century the noblest youths of Germany studied under Blumenbach at Göttingen. Not the least distinguished of his pupils was Alexander von Humboldt, who has since become as famous as his master. In 1825 Blumenbach celebrated the jubilee of his professorship, the 50th anniversary of his inauguration as a doctor of medicine. On this occasion he bequeathed a certain sum of money for the advancement of natural history. Ten years later, in 1835, after laboring 60 years as a professor and a diligent student of comparative anatomy and physiology, he retired from public life, and only lectured privately to select audiences, in which he numbered several of the crowned heads of Europe, on different occasions. His style of lecturing was said to be exceedingly attractive, from the interest he took in his own favorite studies, and the ease with which he taught to others what he knew himself so well.

BLUNDERBUSS, a short, heavy, large-bored firearm, often brass-barrelled, and bell or trumpet mouthed. It was used to discharge a heavy load of slugs or small bullets at a short range, and some years since was generally employed as a weapon for the defence of houses against burglars. As a military weapon, it was used occasionally on ship-board for repelling boarders, or pouring heavy volleys into boats, when attempting to cut vessels out from anchorage. It is now wholly disused.

BLUNT, EDMUND MARSH, author of various nautical works, born at Portsmouth, N. H., June 20, 1770. His "American Coast Pilot" has made his name famous to seamen throughout the world; there is not a port on the extensive coasts of the United States undescribed, and the sailing directions have been the means of saving thousands from shipwreck. It was commenced by him in 1796, has been published in 18 successive editions, has been translated into most of the languages of Europe, and is continued to this day. His other nautical works, charts, &c., have been numerous. He yet lives, at the advanced age of 88.—**EDMUND**, son of the preceding, born in Newburyport, Mass., Nov. 28, 1799. At the age of 17 he surveyed the harbor of New York; from that time up to 1833 he was engaged in surveys in the West Indies, Guatemala, and the sea coast of the United States, on his private account. In 1833 he was appointed a first assistant, by Mr. Hassler, in the U. S. coast survey, in which office he has continued to this date. Mr. Blunt is a surveyor of untiring industry, great skill, and scrupulous accuracy. The country is indebted to him for the introduction of the Fresnel light.

BLUNT, JOHN JAMES, professor of divinity in the university of Cambridge, England, born at Newcastle-under-Lyme, in 1794, died at Cambridge, June 17, 1855. He obtained a fellow-

ship in 1816; was appointed in 1818 one of the travelling bachelors; visited Italy, and wrote a volume on the "Vestiges of Ancient Manners and Customs discoverable in Modern Italy and Sicily," published in 1823, and translated into German. He held various ecclesiastical appointments until 1839, when, on the death of Bishop Marsh, he was elected to the Lady Margaret's professorship of divinity. On the death of the bishop of Salisbury, the vacant see was offered to him, but he preferred to remain in the university. Many of his lectures and sermons were published. A 8d edition of his "Undecided Coincidences in the Writings both in the Old and New Testaments" appeared in 1850. His most popular production was his "Sketch of the Reformation of the Church of England," which passed through 15 editions, and was translated into French and German.

BLUSHING is a sudden reddening of the face, caused by a rush of blood into the capillary vessels of the skin. A blush is excited by confusion of mind, arising from surprise or diffidence, modesty or shame, or conscious guilt and apprehension, showing the influence of the passions and emotions on the nervous system and the circulation of the blood. Sudden fear and apprehension cause the blood to rush from the external surface to the internal organs, leaving the bloodless lips quite pale, and the whole face suffused with deathly pallor. It is a kind of inverse blushing; the one being a sudden flash of color in the face, the other a sudden flash of paleness.

BOA, a large serpent of the fourth family, *boida*, of the second order of reptiles, *ophidia*. This family is known by the following characters: The under part of the body and tail, except in *bolyeria*, is covered with transverse bands, each of a single piece, narrow, scaly, and often 6-sided; there is neither spur nor rattle at the tip of the tail; the hinder limbs, formed of several bones, are developed into an exerted horny spine or hook on each side of the vent; the body compressed, larger toward the middle; the tail short and prehensile; the pupil, except in *tortrix*, oblong and erect; and small scales, at least on the hinder part of the head. A remarkable feature of their anatomy consists in their having one lung shorter by one-half than the other. They are the largest of serpents, and though without venom, their immense muscular power enables them to crush within their folds large animals, which they first lubricate with saliva, and then swallow whole by their enormously dilatable jaws and gullet. They sometimes entrap their prey by fixing themselves by the tail to some aquatic tree, and then allowing themselves to float.—It appears that, in former times, serpents of this family existed in Italy, Greece, and the Mediterranean regions of Africa. Virgil's description of the death of Laocoön and his 2 sons, as well as the magnificent marble group, which either furnished the subject for his description, or was suggested to the sculptor

by it, and again the account, in the 24th idyll of Theocritus, of the serpents sent by Juno to destroy the infant Hercules in his cradle, all show that the artists were perfectly acquainted with the action and *modus operandi* of constricting serpents. The narrative by Valerius Maximus of the gigantic serpent, which had its lair by the waters of the river Mejerda, not far from Utica, or the present site of Tunis, and which kept the whole army of Regulus at bay, killing many of his soldiers, until it was at length destroyed by stones cast from the engines used in the siege of cities, is familiar to most readers. It is, moreover, stated that the skin of this serpent was 120 feet in length, and was preserved in a temple, at Rome, until the time of the Numantine war. Pliny, who relates this story, giving it full credence, adds that the serpents called *boæ* in Italy confirm this; for that they grow so large that one killed on the Vatican hill, that is to say, within the very confines of the city, in the reign of Claudius, had the entire body of an infant in its belly. Suetonius also, in the 43d chapter of his life of Octavianus Cæsar, mentions the exhibition of a serpent of 50 cubits, 75 feet, in length, in front of the Comitium. These tremendous reptiles, which are now found in the tropical countries only, have been recently distinguished into no less than 25 genera, under which are arranged, according to characteristic differences, the serpents in the British museum. Among these genera, which contain most of them several species, are the following: I. *Python*, 2 species, distinguished from the boas by placing its eggs in groups, and covering them with its body. This habit, which had been doubted, has been verified from observation of the proceedings of a python in the *jardin des plantes* at Paris. The *ular sawad* of Hindostan, Ceylon, and Borneo, and the rock snake of Java; the former is one of the largest and most terrible of all these hideous monsters, said to grow to 80 feet in length, and proportionally stout, and to be able to manage a full-grown buffalo. There are living specimens of both these snakes in the zoological gardens, Regent's park, London. II. *Hortulia*, 3 species, all of South Africa: the Natal rock snake, 25 feet long, and as large as the body of a stout man; the Guinea rock snake, of which there is a specimen in the Regent's park, which is calculated to weigh one hundred weight; and the royal rock snake, which is the serpent with which Mr. Cumming had one of his severest contests by the side of an African fountain, near which the intrepid hunter was marking the spoor of game. III. *Boa*, 4 species, peculiar to Mexico, Honduras, Santa Lucia, and Peru. This is the genus which has given the general name, in common parlance, to the whole family of great constricting serpents. The skin of one of these serpents, of the first species, *boa constrictor*, the *tlacoatl* and *temacuilcahuilia* of the Mexicans, and the object of their hideous, unnatural, and sanguinary serpent-worship, of

which the Spaniards stood in such awe, is preserved in the British museum. The proper *boa* is decided by Cuvier not to be a native of any portion of the old world. IV. *Eunectes*, one species, the native of tropical America; this is the anaconda, a name said to be of Ceylonese origin, which, like that of *boa*, has been vulgarly given to the whole family. (See ANACONDA.)—The *boa* is the most terrible class of destructive reptiles in existence, against which no care could defend, no force avail to deliver, when once their deadly hold is taken; their long, keen teeth, curved strongly backward, each tooth in either jaw fitting between the interstices of 2 in the other, clasping whatever they seize upon inextricably, and with the force of some dreadful machine. Then, with the speed of light, the vast volumes are wound in huge knots, not in regular spirals, about the agonized creature, which rarely has the power to utter above a single cry; although the process of death is neither rapid nor easy, being a combination of strangulation by compression of the vitals, and of crushing all the bones into one shapeless and disorganized mass. So long as the terrible constrictor is sensible of life or motion, within his compressed folds, he still constricts them closer and closer; but when once aware that there is life no longer in the wretched relic which he embraces, he slowly glides away, and suffers his prey to drop, a mere rag, from the gripe of the folds which have done their work so fatally. There are extant several accurate and minute accounts of the manner in which these monstrous serpents kill and eat, drawn up by painstaking and scientific observers, who have watched their performances while in confinement; one is by Mr. McLeod, who wrote a narrative of the voyage of H. M. S. *Alceste*, in which was brought over to England, from the island of Borneo, a serpent of the family of *boïda*, 16 feet in length, and 18 inches in circumference, together with 6 miserable goats destined to feed the snake on his voyage. One of these wretched animals was devoured every 3 weeks, and Mr. McLeod's description of the agony of terror and antipathy of the goat on being thrust into the den of the *boa*, is terribly vivid, and even painful in its interest; as much so as are his details of the method of its absorption, not by the power of suction, as it is vulgarly called, but by the effect of muscular contraction, assisted by 2 rows of strong, hooked teeth, most curious and extraordinary. This snake was 2 hours and 20 minutes employed in gorging the goat, during which time, particularly while the animal was in the jaws and throat of the constrictor, the skin of the latter was distended almost to bursting, while the points of the horns of the victim could be seen, threatening, as it were, at every moment to pierce the scaly coat of the destroyer; no such results, however, followed. The snake coiled himself, and remained torpid for 3 weeks, during which he so completely digested, and converted to his own use, the whole of the goat, that he passed

nothing from him but a small quantity of calcareous matter, not equal to a tenth part of the bones of the animal, and a few hairs; and at the end of that time was in condition, on awakening, to devour another goat. The other narrator of his somewhat similar experience, is Mr. Broderip, the author of those delightful works, "Leaves from the Note-book of a Naturalist," and the "Zoological Journal," who describes, in almost the same words, the same phenomena, in the killing and deglutition of a rabbit, which he observed in the tower of London. The time required to kill the rabbit was 8 minutes, during which its sufferings were cruel, as could be seen by its painful breathing, evinced in the motion of its flanks. In every respect, indeed, Mr. Broderip corroborates the observations, and coincides with the opinion of Mr. McLeod, except on one point of fact, easily reconcilable, and one of opinion, in which Mr. Broderip is undoubtedly correct, as the more scientific and practised observer of zoological experiments. The rabbit which Mr. Broderip saw devoured, and other rabbits and chickens which he saw exposed to the snakes, exhibited no terror of, or repugnance to, the serpents, the poultry even roosting on his coiled folds; while the goats were cast into agonies of horror at the mere sight. This is explained by the fact, that the English rabbits and fowls, having no experience, either acquired or hereditarily transmitted in the shape of natural instinct, leading them to fear the boa, feared him not; while the goats, being natives of the same country with the serpent, had the natural instinctive awe of him which the necessity of preservation ingrafts on all animals, in the form of transmitted antipathy. The point of observation on which they differ is, whether the respiration of the serpent is suspended during the act of swallowing, which Mr. McLeod affirms, and Mr. Broderip denies, although, without dissection, the mode of his breathing cannot well be determined.

BOADEN, JAMES, an English dramatist and biographer, born 1762, died 1839. He was a painter, but, abandoning the art, wrote a great many plays, none of which now keep possession of the stage. His acquaintance, as newspaper critic, with eminent performers, he turned to good account—his lives of John Kemble, Mrs. Siddons, Mrs. Jordan, and Mrs. Inchbald, being the result. He also wrote an "Inquiry into the Authenticity of the various Pictures and Prints of Shakespeare," directed against what is called Talma's portrait of Shakespeare. He accepted as most authentic the likeness given in the folio edition of 1623, and what is generally known as the Olandos portrait.

BOADIOEA, or BONDICEA, killed herself by poison, about A. D. 62, queen of the Iceni, a British tribe, inhabiting what are now the counties of Cambridgeshire, Suffolk, Norfolk, and Hertfordshire. The celebrated earthworks still extant, known as the Devil's ditch, at Newmarket heath, and at Six-Mile bottom, are supposed to be the fortifications of this tribe, and

perhaps of this queen, against the Romans. She was a contemporary of Nero, and was a woman of remarkable character, both for firmness and ability. Her husband, the king of the Iceni, Prasutagus, dying, left Nero and his own 2 daughters joint heirs to his great wealth, hoping thereby to preserve his family and kingdom from the rapacity of the conquerors. But immediately on his death his kingdom was taken possession of by the Roman centurions. For some real or imaginary offence, the British queen was publicly scourged by the executioner, and her daughters were abandoned to the lust of the slaves, who brutally violated their persons. Stung to frenzy by this outrage, taking advantage of the absence of Suetonius Paulinus, the Roman governor, from that part of England, Boadicea raised the whole military force of her barbarians, and bursting upon the Roman colony of London, reduced the city to ashes, and put to the sword in that and neighboring places—of Roman citizens, traders, Italians, and other subjects of the empire—at least 70,000 individuals. Suetonius lost not a moment in hurrying to the scene of action, although it was well known that the queen of the Iceni was in command of 120,000 men, which gradually increased to 280,000, according to Dion Cassius, lxi. 701, while he could bring into the field in all less than 10,000 soldiers. It is true that absolute credit cannot be given to statements of prodigious numbers, such as the above, but at all events the disparity of force was extraordinary. The legion, posted on heights, where its flanks and rear were covered by woods, seems to have received the attack passively, sheltered from the missiles of the Britons by their large, oblong bucklers, until, when the darts and arrows of the barbarians began to fail, by one compact charge they carried all before them. They spared nothing; women, children, the beasts of burden, the dogs, were all cut to pieces. It is said that 80,000 Britons were butchered that day, while of the legionaries only 400 fell, and about as many more were wounded. It is believed that the action took place not far from St. Albans, *Verulamium*, a Roman colony, which at the first irruption had shared the fate of London.

BOAR (*sus aper*), the male swine. The domestic hog and the wild boar of Europe, Africa, and Asia, are, generally speaking, of the same variety, and will breed together and produce young capable of propagating their species to the most remote generations. It appears that the most improved of the English and American domesticated breeds are, for the most part, largely crossed and intermixed with the Chinese and, perhaps, the Turkish varieties. In America, Australia, and the Polynesian group, the hog was unknown, originally, in a natural condition; but having been turned out everywhere by the early navigators who discovered the coasts and islands of the Pacific, he has propagated his species so rapidly, in those mild and moist latitudes, that he is now

everywhere abundant, both in confinement and in a state of nature. The South American forests in particular are inhabited by vast droves, which have relapsed into primitive wildness, while in the more woody parts of Virginia, the western states, and Canada, the domestic hog, having become about half wild, is not the pleasantest of objects to be encountered by a wayfarer, especially if he fall in with a drove of them, and be accompanied by dogs, to which they have a special antipathy. The characteristics of the boar are the formidable recurved tusks or canine teeth, two of which proceed from the upper, and two of yet more formidable dimensions from the lower jaw, with which it inflicts wounds of the most terrible and often fatal description on whatever attacks it, ripping in an upward direction, and aiming especially at the soft parts, as the belly, flanks, and groin of the horse, dog, or man, which comes in his way with hostile intentions.—There is a singular variety of the boar, called the babyroussa (*sus babyroussa*), peculiar to Java, Amboyna, and many of the Isles, though not to the continent, of Asia. It is gregarious, is far taller on the leg than the common hog, and has fine, short, woolly hair, instead of bristles; its distinguishing characteristics, however, are the singular tusks in its upper jaw, which are placed on the external surface, and curve upward toward the forehead, which, when the animal becomes old, they almost touch, being often 12 inches in length, of a fine, hard grain like ivory. The peccary of South America, which was formerly classed with the wild boar, has been lately distinguished as an entirely separate animal. The boar, whether wild or domestic, has far coarser bristles than the sow, and the wild animal as far exceeds the tame in that particular, as in his strength, size, ferocity, and the largeness of his tusks. The flesh of the hog family is much prized, and is of great value on account of the readiness with which it takes up salt, and its excellence when so prepared, which peculiarly adapts it for preservation, and for use as military or naval stores. Where the domestic animal has the free range of forest lands, in which it can feed on the acorns, the beech mast, and the fruit of the sweet chestnut, the flesh is proportionally valued; and it is on this account that the pork of Virginia has obtained a celebrity in America, equal to that of Westphalia in Europe. No other reason tends so materially to give its superior excellence to the flesh of the wild, over that of the tame hog, which has been admitted in all ages. It is singular, however, that the flesh of the boar, in its wild state, is infinitely superior to that of the sow; while, in the domesticated animal, that of the male, until castrated, is so rank as to be uneatable.—During the middle ages the wild boar abounded both in England and France, and hunting the boar was the most esteemed of all field sports. The boar goes to run, as it is called, or goes a brimming, in December, after which time his

flesh is uneatable; the season for hunting him commences in September, when he is in his most perfect condition. A wild boar in his 1st year is called a pig of the saunder; the next year, a hog of the 2d; then, a hog-steer; then, in the 4th year, when he leaves the saunder, a boar; and, after that, a sanglier. A boar is farrowed with his full number of teeth, which only increase in size, especially his tusks of the lower jaw, which are those with which he strikes, those of the upper jaw being used only to whet the others. Boars were hunted in Europe in 2 ways, either by marking them into their holts, or dens, which were then surrounded by nets or toils, and the boars driven into them; or what was called at force with dogs, when the beast was roused from his lair, and hunted with relays of hounds, until he turned to bay, when he was despatched with the boar spear, or hunting sword. In striking a boar from on horseback, the huntsman was particularly charged to avoid striking low, as, in that case, the boar was well-nigh certain to glance the blow aside with his tusks, but to stab him from above, downward, between the shoulders. "In attacking him on foot," which was the ancient Roman method, and very perilous, "the hunter must meet him with his spear, holding one hand on the middle of it, and the other at the end, standing with one foot before the other, and having a watchful eye on the beast, which way soever he turns or winds; for such is his nature, that he sometimes snatches the spear out of the hunter's hands, or recoils the force back upon him. * * * And what place soever he bites, whether man or dog, the heat of his teeth causeth an inflammation in the wound. If, therefore, he does but touch the hair of the dog, he burns it off; nay, huntsmen have tried the heat of his teeth, by laying hairs on them as soon as he was dead, and they have shrivelled up as if touched with a hot iron." However that might be, which seems more than a little hypothetical, a wounded boar was a most formidable adversary; when old, he never cried in the killing, but fought fiercely while life lasted. He had a knack, when stabbed, of running up the shaft of the spear, so as to gore his slayer even in his own death pang; wherefore the boar hunter was ordered to take care that "his boar spears should be very broad and sharp, branching forth into certain forks, that the boar may not break through them to the huntsman; so the best places to wound him are the middle of his forehead, between the eyelids, or else upon the shoulder, either of which is mortal." In England, the boar has long been entirely extinct; in France, they are still found in parts of Brittany and Normandy; and in parts of Germany, the Holstein provinces of Denmark, in Italy, especially in the Pontine marshes, in many parts of Greece and Asia Minor, they are still abundant. The rifle, however, has long superseded the spear, in hunting them; and the danger, as in a great measure the excitement of the sport, may be said to be at an end. While boar hunting was in its

palmy force, a particular dog was cultivated for the sport, which was of great rarity and value. It appears to have been a half-bred dog, between the bloodhound and the mastiff, from the magnificent specimens exhibited in some of the hunting pieces of Teniers and Snyders. There was, however, a dog, more or less homogeneous, known as the boar hound, the best of which came from Pomerania, and on which such high store was set, that they were one of the choicest gifts presented to crowned heads. Boar hunting, or hog hunting, as it is there called, is still a most favorite sport in British India, especially in the Deccan, where hogs abound in the reedy jungles of the plains. The sport is there conducted in very different fashion; the hunters are mounted on Arab coursers, and pursue their game, when he is once roused and driven out of the jungles by the shouts and tomtoms of the native beaters, without the aid of dogs, running, or rather riding him to bay by the mere speed of their horses. It is said that a hog, unwieldy as he looks, if he gets a moderately good start, can maintain a pace for 20 or 25 minutes, equal to the fastest horse with fox-hounds; and he can jump nullahs, or dry water-courses, of such dimensions as do not appear trifles, even to Leicestershire sportsmen. The honor of the day is to the man who draws the first blood, or as Indian sportsmen say, "wins the first spear;" and the rivalry to gain it is such, that the last 5 minutes of a well-contested hog hunt is like the finishing run in of a desperate steeple chase. The weapon is a long lance of tough bamboo, about ten feet in length, with a steel head, shaped like a laurel leaf, and as keen as a razor. This is grasped, usually, at about 18 inches from the butt, overhandedly, so that the shaft extends nearly horizontally backward, but with a downward inclination, the head, or blade, being in the rear of the horse's croup. When the boar charges, which he does right at the horse's forelegs, often cutting his shanks to the bone with his terrible tusks, and, if he do not wheel off in time, ripping out his intestines, the horseman, rising in his stirrups, strikes him an overhanded stab, delivered perpendicularly downward, between the shoulders, making his horse pivot to the left, on his hind legs, at the same instant. Sometimes, however, in the excitement and eagerness to get the first blood, the spear is shifted in the hand, and delivered with a forward lunge, only intended to wound, and win the honor, not to kill the quarry. This is described as a much finer, more exciting, and even more dangerous sport than tiger hunting, notwithstanding the more appalling sound of the latter, since the hunter of the man-eater, on the back of his elephant, is nearly as safe as he would be in the tower of London.

BOARDMAN, GEORGE DANA, an eminent missionary of the Baptist denomination, born in Livermore, Me., Feb. 8, 1801, died in Burmah, Feb. 11, 1831. He enjoyed the advantages of the public school in his native town until he was 9 years of age, when his father, who

was a clergyman, removed to North Yarmouth, and he became a member of the academy in that place. He remained connected with this institution till 1816, when he was removed to the academy in Farmington. In 1819 he entered the Waterville academy, which was organized as a college the succeeding year. He was graduated from this institution with distinguished honor in 1822. The estimate which his instructors put on his character and attainments was evinced by their recommending him for the post of tutor, to which he was immediately elected. He soon signalized himself in this position, and the hope was entertained by the friends of the college that he would consent to assume a professor's chair and retain a permanent connection with its board of instruction. But he cherished other views, and after devoting about a year to the duties of his tutorship he resigned his post to devote himself to the work of Christian missions. At an early period of his connection with the college he became impressed with a desire to preach the gospel. Almost coincident with his impressions in reference to the work of the Christian ministry were those convictions of duty which led him to consecrate himself to the cause of missions. His mind balanced for a time between the purpose of laboring among the Indians of our own country and the suggestion made by some of his friends, that he should offer himself to the Baptist board of foreign missions, for some post connected with their missions in the East. His course was finally determined by intelligence of the death of the lamented James Coleman of the Aracan mission, which reached this country soon after he entered on the duties of his tutorship. He at once decided within himself to take the place of the fallen missionary. Accordingly, in the spring of 1823, he offered himself to the Baptist board of foreign missions, and was accepted. In June of the same year he entered Andover theological seminary, where he remained nearly 2 years, earnestly prosecuting his preparation for his great life-work. He was ordained at West Yarmouth, Me., Feb. 16, 1825, was married to Miss Sarah Hall July 4, and, on the 16th of the same month, sailed from Philadelphia for Calcutta. He reached the latter place Dec. 2. Here he found several missionaries who had been driven from their fields of labor in Burmah, and learned that Mr. and Mrs. Judson were in a Burman prison at Ava. No alternative remained to the young missionary and his wife but to wait until the door into Burmah, now closed, should be reopened. This did not occur until the spring of 1827. The interval had been diligently employed in acquiring the Burman language, under the direction of a native teacher. In April, 1827, Mr. Boardman joined Mr. Judson at Amherst, whose heroic wife, worn out by the horrors of her captivity at Ava, had, a few months before, been consigned to the grave. It having been determined to establish a mission at Maulmain, the new seat of the English government,

Mr. Boardman was selected by his associates to superintend it. He entered upon the field of his destined labor in the latter part of May, 1827. To him was thus accorded the honor of planting a mission which became the radiating point of all the Christianizing influence connected with the Baptist missions in Burmah. It is not too much to say that the success which has crowned this station is attributable in no mean degree to the prudence, piety, and organizing force of the young missionary, who met and surmounted the obstacles in the way of its establishment. In the course of a few months the station at Amherst was abandoned, and the whole missionary force concentrated at Maulmain. It having been decided to establish another missionary station at Tavoy, about 150 miles down the coast from Maulmain, Mr. Boardman was, by the unanimous consent of his associates, designated as the agent by whom the difficult and responsible work was to be commenced. He reached Tavoy, the capital of the province of the same name, in the early part of April, 1828. He was accompanied by Ko Thah-buy, a Karen convert, then a candidate for baptism, a Siamese, lately baptized, and a few boys from his school at Maulmain. One of his first acts after his arrival was to baptize Ko Thah-buy—a man whose wonderful labors, and more wonderful success, among his countrymen have made his name historic. The remarkable religious movement among the Karen people commenced with the enlightenment of a few persons, brought through the influence of Ko Thah-buy, under the instructions of Mr. Boardman. These carried to their brethren in the jungles the news that a white teacher had come from beyond the sea to bring the knowledge of the true God. Parties began to come from a long distance to see and hear the teacher for themselves. Encouraged by these indications of candor, Mr. Boardman, having matured his plans for the systematic instruction of the Burman population of Tavoy, by means of schools and other instrumentalities (to the former of which he attached great importance as a means of evangelization), resolved to make a tour into the jungle for the purpose of visiting several Karen villages to which he had been urgently invited. Feb. 5, 1828, he set out on this first tour of missionary labors among the Karen villages. He was absent about 10 days. Such was the success which attended this expedition, that he determined at once to enter on a systematic course of itinerant labor among the villages in the vicinity of Tavoy. Usually accompanied by Ko Thah-buy, or some other Karen convert, and some of the boys from his school, he would visit 3 or 4 villages in the course of a week, preaching in *zayats*, going from house to house, conversing by the wayside with such as he met, spending 4, sometimes 5 days of each week in this manner. Sometimes he made boat trips on the river, and at others he took long journeys by land, in spite of danger and fatigue, preaching the gospel to a peo-

ple ready and anxious to hear. In this way he spent the 8 years of his missionary life at Tavoy. His activity during this period seems almost incredible. The journeys he made by river and land, the sermons he preached, the visits he made, the conversations he held, were enough to absorb the whole time and tax to the utmost the endurance of a hardy man. But Boardman did all this, in spite of interruptions occasioned by frequent sickness and repeated deaths in his family, and while he was rapidly sinking to the grave in a confirmed consumption. He would not take a day for rest. The only cessation of his labors in these days of his decline was on the occasion of his wife's visit to Maulmain, after her recovery from a dangerous illness. He joined her at the latter place in May, and remained about 7 months. This seeming respite was, however, only a change in the form of his work. During this time he preached twice a week in English and once in Burmese, beside attending catechetical exercises 8 evenings in a week, and the daily correction of proofs for the press. Such instances of rising above bodily weakness and subduing pain by the force of will are as rare as they are heroic. Before leaving Tavoy for Maulmain, he made a promise to the Karens that he would visit them again in the jungle on his return. Jan. 31, 1831, he left Tavoy in a litter to fulfil that promise. He reached the point of his destination, but, owing to the rapid progress of his disease, was able to accomplish but part of the task which he came to perform. He set out to return to Tavoy, but died when about 12 miles from that place. Though only 80 years of age when he died, he had accomplished what few men are able to attain during a long life. At the time of his death the mission church at Tavoy consisted of 70 members, and within a few years thousands of Karens were converted to Christianity through the agencies which he set on foot.

BOAT, properly a small vessel propelled by oars or poles. Boats are made of iron, copper, India-rubber, gutta percha, skins, and of all kinds of wood. Wooden boats are usually built either smooth or lap-streak, that is, where the upper plank laps over the next lower. Boats differ much in shape and size, depending on the use to which they are to be put. *Launch* is the largest boat carried by a man-of-war, from 36 to 42 feet in length, and rowing 24 oars. *Long boat*, used by merchant vessels for conveying heavy burdens; this name is given to the largest boat, without regard to size. *Cutter*, shorter and lighter than the launch, and much faster. Ships of the line carry 3. Cutters are from 32 to 36 feet long. *Jolly boat*, smaller than the cutter, and not so fast, used for going on shore, usually rowed with 4 oars. *Gig*, a fast rowing boat nearly the size of the cutter, employed both in the merchant service and navy. *Barge*, in the English navy, about the size of the cutter. This name is given to the large boats used on occa-

sions of state. On the Mississippi it means a scow, flat-bottomed, and of very light draught. Sometimes also applied to the large 8 and 10-oared race boats. *Pinnace*, smaller than the barge, used for conveying light articles. In the English navy the pinnace launch is next in size to the launch. *Paddle-box boat*, so called from the place where they are stowed, commonly built like a whale boat, and smaller than the cutter. *Whale boat*, a sharp, light boat, very wide amidships, bow and stern alike, rowed with 6 oars. All surf boats are whale-boat model, or modifications of it. *Dory*, light, flat-bottomed, very sharp, with sloping sides, from 15 to 20 feet in length, used very extensively in the fisheries. *Wherry*, in the United States, a dory; in England, a race boat for one rower, and from 15 to 30 feet in length. *Skiff*, a little boat for crossing rivers, or going on shore from a vessel. *Cobble*, a small fishing boat, flat-bottomed. *Punt*, a flat-bottomed, decked boat, of very light draught, used chiefly by gunners; dimensions, according to Hawker, 21 feet long, 8 feet beam, 6 inches height. *Shallop*, small ship's boat; term not now used. *Scow*, a broad flat-bottomed boat, with square bow and stern, for conveying heavy weights, propelled by poles or sweeps, from 80 to 50 feet in length, and 12 to 18 feet in width. *Canal boat*, a broad shallow boat, like the scow, except in having a keel and a rather sharper bow, used only on canals. *Flats, flat boats, arks, &c.*, boats resembling scows, save in being decked. They are still to be found on the Mississippi and its tributaries, and are used for bringing all kinds of produce down the river. *Bateau*, boats smaller than the scow, and used in the same way. *Gondola*, in the United States, a scow; properly, a very sharp, fast boat, sculled with 1 oar. *Moses*, large flats, used in the West Indies for taking molasses hogsheads from shore to ship. *Felucca*, a large boat with lateen sails, decked, and rowing from 10 to 16 banks of oars. *Life-boats*, boats used in storms for saving life. They are made either with a lining of some buoyant material or with air-chambers. In 1790, Mr. Greathhead, of South Shields, England, invented a life-boat of the following dimensions: 80 feet in length, 8 feet in width, and about 8 feet in depth. She was very broad amidships, with high sharp ends, and coated with cork along the gunwale. Mr. Greathhead was rewarded by the society of arts for this boat in 1802. Francis's metallic life-boats, of copper or galvanized iron, are now much used. They are buoyed up by air-chambers placed at the ends, or by air-tubes running along the sides. These boats are almost indestructible. In Lieut. Lynch's expedition to the Dead sea the wooden boat soon became useless, while those of copper and iron were not in the least injured. Berdan's compressible life-boat has a wooden frame and gutta percha covering and air-tubes; it is made to fold together when not in use. Bonney's life-boat has a large air-chamber running from

head to stern, arranged so as to give great buoyancy even when the boat is full of water. *Dingy*, a wooden life-boat, carried by a man-of-war, has wooden air-chambers at each end, and is about 18 feet in length. *Waist boats* and *quarter boats* take their name from the part of the vessel where they are kept, and are somewhat smaller than the cutter. *Race boats* differ very much in shape from any of those before named. Having only speed in view, they are built as light, narrow, and sharp as possible. They are rowed with from 2 to 12 oars, and are from 15 to 70 feet in length, and generally not more than 8 inches above water. The 2-oared boats are called shell boats, scull boats, or wherries; the larger ones sometimes barges. Their speed is from 5 to 18 miles per hour.

BOATBILL (*canoroma cochlearia*, Linn.), a bird of the order *gralla*, family *ardeida*. It receives its English name from the peculiar form and breadth of the bill, which is much depressed, very broad toward the middle, with the sides gradually compressed at the end; the culmen has a prominent keel, with a deep lateral groove extending to the tip, which is hooked; the wings are moderate, the tail short and rounded, the tarsi rather longer than the middle toe, slender, and covered in front with large irregular scales; the hind toe long, and the claws short, curved, and acute; the length of the bill is about 4 inches, and of the bird, 2 feet. The general color is whitish, with a grayish back, the belly rufous; the forehead white, behind which is a black cap, furnished, in the male, with a long crest. This bird is nearly allied to the herons, and is found in the tropical parts of South America; until recently it has been supposed to be the only species of the genus. It frequents marshy places and the banks of rivers where the tides do not ascend; it perches on the trees overhanging fresh water, darting thence on fishes which happen to swim beneath it; from its generic name, it is supposed to feed also on crabs, which it could readily crush in its powerful bill; on the ground it has very much the gait, attitudes, and air of the herons. It is sometimes called "savacon."

BOATSWAIN, the officer in a ship of war who has charge of the rigging, sails, colors, cordage, cables, anchors, and boats. He inspects the rigging every morning, summons the crew to their duty by the "boatswain's whistle," relieves the watch, and is enjoined to see that the working of the ship is performed with as little noise and confusion as possible. It belongs to him to seize and punish offenders, and to have the care of and steer the long boat; the latter offices, however, he may perform through his mates.

BOAVISTA, or **BONAVISTA** (i. e. fine view), an island of Africa, the easternmost of the Cape Verd islands. It is noted for the production of salt, the manufacture of which is the chief occupation of the inhabitants, and their principal source of wealth. Agriculture is, consequently, much neglected, although the soil is well suited to the growth of cotton and the

cocoa-tree. The island is pentagonal in form, about 20 miles in length, and has 2 basaltic peaks in the centre. There are 8 ports for large vessels, Porto sal Rey, Porto do Norte, and Porto Curralinho. Rabil is the capital. Pop. 9,000.

BOBADILLA, FRANCISCO DE, a knight of Calatrava, appointed in 1500 to a brief authority over the colony of Hispaniola or St. Domingo, then governed by Columbus, died June 29, 1502. The discovery of this island by Columbus, and the belief that it formed a part of the Asiatic continent, which had so long been the object of the cupidity of Europeans, attracted to it from Spain every variety of adventurers. The colony was composed of men impatient of discipline and unused to regular habits, whose sole aim was to rapidly amass a fortune from the golden Indies. They immediately began a system of outrages upon the simple natives, whom they threatened soon to exterminate. At length the colony suffered from scarcity of provisions, for the adventurers would not work the soil for any less object than gold, and the natives were inclined to starve their enemies even if they also starved themselves. In these circumstances, Columbus, who governed the island, forced all, even the proud hidalgo and the learned priest, to short rations and to work in the field. The result was a variety of complaints sent to Ferdinand and Isabella, concerning the maladministration, the indiscretions, and the severities of Columbus. He retained, however, the unabated confidence of his sovereigns, was favorably received upon his second return from the new world, and his third voyage was prepared with all convenient speed. Yet the novelty of the discovery had passed away, and insufficient returns had as yet been received to answer to the glowing descriptions of the great discoverer. When, therefore, the fleet was ready, men were not found willing to embark, and the pernicious expedient was adopted of commuting the regular punishment of convicts to transportation, and sending them, under Columbus, to colonize the Indies. The admiral, upon his arrival again in Hispaniola, found that affairs had not improved during his absence. The colonists were in rebellion, and the natives suffering every oppression. The criminals whom he had brought with him only served to swell the opposition against him, and his exertions succeeded not till after the lapse of a year in restoring order. Meantime, rumors, complaints, and accusations had been reaching Spain, and calumnies were uttered abundantly at court by disaffected returned colonists. Though the confidence of the queen in the admiral remained unshaken, it was yet at length determined to despatch a commissioner to inquire into the condition of the colony, and the person selected for this office was Don Francisco de Bobadilla. This is his first appearance in history, and it is impossible to know the motives which prompted the choice of so arrogant and incompetent a man. He

was intrusted with unlimited powers, which he immediately exerted by arresting Columbus, putting him in chains, and sending him to Spain. He next abolished the regulations which had been enacted by Columbus, and indulged the colonists in all the excesses of power, and, above all, in boundless oppression of the natives. The unexpected outrage upon the most noted man of the time excited general indignation in Spain, and was regarded as a national dishonor. Columbus, after landing in Spain, was reinstated in his honors and emoluments, and before his departure upon his fourth voyage, orders had been already sent for the recall of Bobadilla, under whose weak administration disorders had multiplied to an alarming extent. Columbus landed again in the harbor of Hispaniola on the day when the fleet bearing Bobadilla and other enemies of Columbus started for Spain. This fleet was hardly out of sight when it was overtaken by a fearful tropical hurricane, and Bobadilla perished in shipwreck.

BOBBIN, a sort of spool or cylindrical piece of wood, with a border at each end, pierced to receive an iron pivot, and used in spinning to wind thread or silk on.

BOBBINET, a kind of lace, with a hexagonal eyelet, manufactured by machinery, chiefly in England, but also in France and Belgium.

BOBOLINA, a heroic Greek woman bent on avenging the death of her husband, who was put to death in 1812 at Constantinople, by order of the sultan. At the beginning of 1821 she fanned the flames of insurrection among the Greek population in Turkey, equipped at her own expense 8 ships, herself taking command of 1 bearing her flag, as admiral, and giving the 2 others to competent captains, while her 3 sons fought against the Turks on land. In Sept. 1821, she attended the siege of Tripolizza to meet the Peloponnesian leaders there assembled. She put her ships at the disposal of the government, and maintained the blockade of Nauplia for 14 months, until the Turks were forced to capitulate. She then proceeded, with a small Greek fleet which was intrusted to her charge, to the coasts of Morea, and during the siege of Monemvasia, when one of her nephews lost his life, she did not even waste one hour upon him, but quietly drawing a cloak over his body, avenged his death by continuing to bombard the city. After the war, she lived with her brothers at Spezzia. In 1825 her house was attacked by the friends of a young lady who was supposed to have been dishonored by some member of Bobolina's family, and Bobolina was killed by a rifle shot fired by one of the assailants.

BOBOLINK, the rice-bunting (*emberiza orisycora*, Linn.; *dolichonyx orisycorus*, Swains.). This beautiful and interesting species, which is the rice-bird, or ortolan, of the Georgians and Carolinians, the reedbird of the fowlers of the middle states, and the bobolink of the northern and north-western farm lands in which he breeds, is

migratory through the whole length of the North American continent and islands, from Labrador to Mexico and the Antilles. The dress of this bird, or rather of the male bird of this species, is so entirely variant at various seasons, that in Pennsylvania, although they are continuous visitants and may be seen under every modification of plumage in succession, those persons who do not understand or do not choose to believe or acquiesce in zoological distinctions, persist in the opinion that there are 2 distinct species; while in the southern states, the planters, who only see the bobolink in his gay nuptial attire (when he is, comparatively speaking, a solitary bird) during a few days, on his upward or northern journey, naturally will not credit the assertion that he is the same bird which, at a later season of the year, devastates their rice-fields in countless multitudes, to whose ravages those of a swarm of locusts are comparatively harmless, clad in a plain dress of dingy greenish yellow. The bobolink winters mainly in the western isles, and not in the tropical parts of this continent. Early in spring they begin to appear in the southern states in small parties, the females often preceding the males, tarrying only a few days, seen only in small companies, hurrying from bush to bush in the uplands, and for the most part making their journeyings by night. In the first days of May they appear in Massachusetts, gayly clad in full dress, and in full song, and at this period are neither gregarious nor predatory, though on their northern voyage they damage the crops of young grain by their small foraging parties, tarrying a longer or shorter time on their upward migration, according to the temptation offered by the abundance or scarcity of their favorite grains.—The length of the bobolink is about $7\frac{1}{4}$ inches; the male, in his spring dress, has the upper part of the head, shoulders, wings, tail, and the whole of the under plumage black, lower part of the back bluish white; scapulars, rump, and tail coverts white; there is a large patch of brownish yellow on the nape and back of the neck; bill bluish black, which in the female, young male, and adult, after the month of June, is pale flesh color; the feathers of the tail formed like a woodpecker's; legs brown. The female, whose plumage the adult male assumes after the breeding season, has the back streaked with brownish black; the whole lower parts of a dull yellow. The young birds have the dress of the female. During the breeding season they frequent cool, grassy meadows, which they render vocal with their quick, merry song; the male serenading the female while she is sitting, sometimes mounting and hovering on the wing, sometimes perched on trees, bushes, or tall weeds, in the vicinity of the nest of his dingy-colored mistress. "He chants out," says Wilson, the pioneer of American ornithology, "such a jingling medley of short variable notes, uttered with such seeming confusion and rapidity, and continued for a considerable time, that

it appears as if half a dozen birds of different kinds were singing all together. Some idea may be formed of this song by striking the high keys of a piano-forte at random, singly and quickly, making as many sudden contrasts of high and low notes as possible. Many of the tones are in themselves charming, but they succeed each other so rapidly that the ear can hardly separate them. Nevertheless the general effect is good, and when 10 or 12 are all singing in the same tree, the concert is singularly pleasing." The female makes an inartificial nest of withered grass, in some depressed place in the meadows, and lays 5 or 6 eggs of purplish white, blotched all over with purplish stains, and spotted with brown at the larger end.—During the months of April, May, and June, the males are constantly singing, and they neither congregate nor damage any crops; but toward the end of June they become silent, and slowly and gradually assume the coloring of the females, so that by the beginning of August the change is complete. They now assemble in vast flocks, mute with the exception of a short, sharp chirrup, and do some mischief to the latest crops of oats and barley; chiefly, however, they congregate in multitudinous throngs, literally darkening the air like clouds, as they rise on the wing, and making a whizzing sound, which can be heard at a great distance, like the faint crepitating murmur of far-off thunder, along the river beds and lake margins, wherever the wild rice (*zizania aquatica*) grows abundantly. Along the Delaware and Schuylkill, as also on the borders of the New Jersey and many of the Virginia streams, they are much pursued by shooters—they cannot be called sportsmen, for it requires neither skill nor exertion to kill them; and the sport, as it is called, consists merely in blazing into flocks, so large that one cannot miss them, and bringing down dozens at every discharge of an old king's arm, which is better for the sport than the best fowling-piece. As the cool frosty nights draw on, late in September and early in October, they quit their northern summering places for the southern rice-fields, which they at times glean so completely, that it is useless to attempt to gather the grain. Here they become so fat and sluggish that they can scarcely fly, and, when shot, are frequently known to burst open on striking the ground. Before the rice crop is fully gathered, they have already made their appearance in Cuba and Jamaica, where they repeat the same ravages on the seeds of the guinea grass (*sorghum*) with the same result of growing so fat, that they receive the name of "butter-birds." To the poets and essayists of the north the bobolink fills the place held by the skylark with European writers, as the harbinger of summer time, and the merry songster of the meadow, cheering the shepherd as he drives his flock afield; and Mr. Irving's charmingly playful description of him has made him a well-known and familiar guest in climes which his wing has never visited.

BOCA (or Booca) TIGRIS, or the Boeuz, the entrance to the Canton river, China. In its centre are 2 strongly fortified and rocky islands, called North and South Wantung. They were attacked and taken by the British, Feb. 26, 1841. All that part of the estuary of Canton river which lies southward of the Bogue is known by the name of the "Outer Water."

BOCCACCIO, GIOVANNI, an Italian novelist, born in 1813, in Paris or Florence, died at Certaldo, Dec. 21, 1875. His family was originally of Certaldo, but his father being engaged in commerce, removed to Florence, where he amassed wealth, and filled several important public offices. On one occasion, however, the father having visited Paris, formed a connection with a lady there, and the subject of this notice was the fruit of their unwedded love. Very early in life Giovanni displayed a remarkable aptitude for learning, and before he was 7 years old, composed verses with perfect facility. He was placed under the care of an eminent master, Giovanni da Strada, but his father having determined on a commercial career for his son, removed him from his tutor before his Latin course was completed, and as soon as he had acquired a sufficient knowledge of arithmetic apprenticed him to a merchant, with whom he remained 6 years. His master finding that he profited nothing, although he made in his company several commercial journeys, finally in despair sent him back to his father, and was accustomed to regard him as a very narrow-minded youth. His father had sufficient penetration to discover that his son would never make a merchant, but thought that his studious habits might serve him in the legal profession. But the law proved as distasteful as commerce, and although he labored assiduously to gain a knowledge of it, his repugnance could not be overcome, and led to a series of altercations between himself and his father, who repeatedly declared that his son's fondness for poetry would only involve him in poverty. Over this part of his life there is some obscurity, but it would appear that his father, finding that the law had little attraction for Giovanni, forced him to return to commerce, and fix his residence in Naples. The exquisite situation of that city, its delicious climate and enchanting scenery, its bay overhung by the flaming grandeur of Vesuvius, its classic monuments, all combined to infuse the very spirit of poetry and romance into the breast of Boccaccio. The king, Robert of Anjou, who was a friend and patron of Petrarch, was greatly devoted to literature, and thus drew to his court the most eminent scholars of Italy. Boccaccio was well acquainted with Giovanni Barrili, a man of erudition, and Paolo of Perugia, the king's librarian, and excited by their example and encouragement, he entirely abandoned commerce and gave himself up to the pursuit of learning. His father gave his consent only on the condition that he should study the canon law, and although against his disposition, he applied himself to it for some

time, took his doctor's degree, and after that found himself more at liberty to indulge his passion for poetry, while at the same time he devoted himself to the higher branches of philosophy, astrology, then a favorite study, and to the fathers of the church. He remained 8 years in Naples, and during his stay there was fired with greater desire of distinction by the visit of Petrarch on his way to Rome, where he had been decreed the honor of the laurel crown. Boccaccio marked with delight the splendid reception given to Petrarch, his examination of 8 days, his noble oration, and the applause which followed, but was far more pleased in after years to make the acquaintance of the illustrious poet, with whom he formed a friendship which lasted through life. Another connection of less reputable character was established about this time. Boccaccio was naturally fond of gay company, and had not resisted the seductions of Naples, which 5 centuries ago was as famed for its dissolute character as at the present day. The object of his passion in this instance was the princess Mary, the illegitimate daughter of King Robert, and half-sister of the celebrated Joanna of Naples. She was married to a Neapolitan gentleman, but at once ardently returned Boccaccio's love and became his avowed mistress. At her instance, he composed his romance of *Il Filocopo*, and *L'Amorosa Fiammetta*, in the latter of which his lady, under the name of Fiammetta, bewails the loss of Pamphilo, supposed to represent himself. The *Filocopo* is not skilfully constructed, and is filled with spectres and visions of every kind, and the powers of darkness are summoned before the reader to account for its scenes and incidents. Yet it contains passages of that wondrous grace and vivacity afterward so signally displayed in the *Decamerone*, and touches of human nature in which the whole character is pictured in a single sentence. While he was thus employed at Naples between the blandishments of illicit love and the charms of literary composition, he was suddenly summoned to Florence by the illness of his father. His separation from the princess Mary appears to have affected both lovers with violent sorrow, and it was only by the composition of the romance of *Ameto* that he could console himself during his absence. On the completion of his work, his father's recovery and marriage set him again at liberty to return to the favors of his adored princess. The king had died during his 2 years' stay in Florence, and his daughter Joanna ascended the throne amid great political disturbances. Boccaccio's nature was too easy to be deeply stirred by the state of Italian parties, and he found his position more enviable than it had been before. He was not only happy from his connection with the princess Mary, but possessed the favor of Acciajuoli, who had great power in Naples, and even the regard of Joanna herself. It is asserted on respectable authority that many of the most licentious passages in the *Decamerone*

were written in conformity with the taste and by the command of the queen. While employed in writing this work, Naples was alarmed by the invasion of the king of Hungary, and Joanna fled, but soon returned. His father died in 1350, leaving a son by his wife Bice dei Bostiochi, who was also dead, to the care of Boccaccio. The poet faithfully attended to his trust, and when in his paternal city had the happiness of becoming acquainted with Petrarch, whose intimacy his own fame now gave him some claim upon. Petrarch's example and influence began very shortly to act upon the mind of his younger friend, who from the date of their friendship commenced to turn his thoughts more from licentious pleasures to purer fame. Being now permanently settled in Florence, Boccaccio, by Petrarch's advice, began to take some interest in the affairs of state, although, owing to the vicious luxury of the great, and the misery of the lower orders, no city in Europe at that time presented a more gloomy aspect. His motives were appreciated, however, and he was sent on an embassy to Padua, to invite Petrarch to accept the presidency of the university. Several other missions followed, not very clearly described as to dates, and in April, 1358, he took part in one to Pope Innocent VI., the papal court then residing at Avignon. In the same year was published his *Decamerons* or "Ten Days' Entertainment," one of the most extraordinary works of genius ever written, and which after the lapse of 5 centuries is still regarded as one of the purest specimens of Italian prose, as an inexhaustible repository of wit, beauty, and eloquence, although unhappily deformed with such licentious thoughts and descriptions as render it in a great degree unfit to be read by any one of pure mind. While occupied with these popular compositions, Boccaccio did not lose sight of higher pursuits in literature. Like Petrarch he was a devoted collector of ancient manuscripts, and a diligent student of the classics. Both were travellers, and both employed much of their time and money in rescuing from utter destruction the precious memorials of antiquity. On one occasion Boccaccio visited Monte Casino, within whose monastery he knew many works had been collected, which had escaped the ravages of the barbarians, but found, to his amazement, that they were suffered to rot in a damp loft exposed to the weather, and that frequently when the monks were in want of money, they took some of the manuscripts, obliterated the writing, replaced it by copying on the parchment some part of the ritual, and then sold the new productions among the people of the neighborhood. To such collectors as Petrarch and Boccaccio, and to the latter preëminently, the world owes a debt of gratitude for the rescue of many of the great classic works which otherwise would have been irretrievably lost. In 1359 the author of the *Decameron* visited Petrarch at Milan, conversed with him, as he informs us, at great length on the subjects of morality and religion, and deter-

mined to devote himself more seriously to holy studies. This resolve received additional stimulus in 1362 from a singular circumstance. A monk from the Carthusian monastery at Sienna came to visit him, saying that he was charged with a message to him from Father Petroni, who on his death-bed, although he had never seen Boccaccio, declared that he knew him in spirit, and commissioned the monk to exhort him to repentance. In order to prove the truth of his words, the monk told Boccaccio of a circumstance in his life which the poet thought known only to himself. So great was the effect of this warning, that he determined to abandon poetry, sell his library, and lead a life of penance and meditation. With this view he wrote to Petrarch, supposing that his sudden purpose would meet with kindred enthusiasm, but his friend answered in a strong common-sense letter, instructing him to receive the warning to repentance, but informing him that there was no necessity for selling his books or abandoning his studies. The converted man accordingly pursued literature, and wrote in a strain altogether free from his former licentious vein, while he assumed the ecclesiastical habit, and applied himself to theology. Unfortunately for Boccaccio he was not wealthy, and his great liberality, which was a striking feature of his character, in time impoverished him. With disinterested generosity a large part of his means was dissipated in the collection of Greek manuscripts, his emissaries visiting many parts of Europe to procure them. His fortune was thus gradually impaired, and toward the decline of life he found himself poor and deserted by all his friends, except the noble-minded and constant Petrarch. That great poet wished his friend to take up his abode with him, but Boccaccio preferred independence, and declined the offer, although he visited Petrarch whenever he found an opportunity. In 1368 he was invited to Naples by the grand seneschal Acciajuoli, but was so hurt by his cold reception, that he soon left and went to Venice to meet Petrarch. On returning to Florence he found its turbulent state of society in little accordance with his wish of retirement, and took up his abode in a little cottage in Certaldo, in the vale of Elsa, dear to him as the birthplace of his family. From this retreat he was soon summoned by the chief citizens of Florence, to undertake an embassy to Urban V. at Avignon, and repairing to the papal court he experienced the most flattering reception. He was again sent to Urban in 1367, after the pontiff had removed to Rome, when the character of Boccaccio had so completely changed from his former looseness, that he was characterized by the bishop of Florence as one in whose purity of faith he had the utmost confidence. In 1368 he again visited Venice for a short time, and subsequently Naples, where Queen Joanna endeavored to persuade him to fix his abode. But earthly pleasures had lost their charms for him. He fell ill, his thoughts became fixed on the subjects of religion and of

eternity, and he hastened back to the solitude of his little cottage, and, says Baldelli, "the chamber which used to ring with the harmonious songs of the muses, was as silent as the grave." He was now honored by the Florentine magistrates with a professorship founded in memory of Dante, for the better explication of the *Divina Commedia*. His lectures commenced in October, 1878, and continued until his death, which was doubtless hastened by the demise of Petrarch 10 months before his own. In eloquent language he bewailed his loss. With a broken and contrite spirit, on dying, he bequeathed the little property remaining to him to his 2 nephews, and his library to Father Martin, an Augustine monk.—Boccaccio wrote numerous works in Italian and Latin, and both in prose and poetry, few of which are referred to at the present day; his great fame rests upon the Decameron. In these hundred tales of love, displaying the most wondrous fertility of invention, the reader is perpetually delighted with the beauty of the narrative and the variety of the scenes, whether of intrigue, wit, or pathos—no two stories, nor even their introductions, resembling each other. The author's fondness for involving friars in every imaginable scene of mischief and ludicrous mishap, created great scandal to the church, and his famous romance, the tenth novel of the sixth day, in which "Friar Onion promises some country people to show them a feather from the wing of the angel Gabriel, instead of which he finds only some coals, which he tells them are the same that roasted St. Lawrence," drew down the solemn anathemas of the council of Trent. The editions of the Decameron are almost innumerable, and translations exist in all the languages of Europe. The earliest editions are extremely rare, and of that of Valdarfer in 1471, only one copy is known. This was purchased, not many years since, at the sale of the duke of Roxburgh's collection, by the marquis of Blandford, for the enormous sum of £2,860.—Boccaccio's poem, *La Teseide*, is written in the *ottava rima*, of which he is usually considered as the inventor, and is the first Italian poem which presents a specimen of the epopee. Chaucer borrowed from this poem his "Knight's Tale," and Shakespeare a part of his "Midsummer Night's Dream." The great English dramatist has also, in some measure, availed himself of Boccaccio's *Decameron*, as in "Cymbeline" and "All's well that ends well." With all his faults, we may consider Boccaccio one of the great revivers of learning and a benefactor to mankind, as well as worthy of the third place in that great triumvirate with Dante and Petrarch, "which renders the fourteenth century so splendid an epoch in the history of literature."

BOCCAGE, MARIE ANNE LE PAGE, a French poetess, born in Rouen, Oct. 22, 1710, died Aug. 8, 1802. Educated at Paris, Mlle. Le Page early displayed taste and talent. She married a literary man of the name of Fiquet du Boccage. At the age of 86, she appeared as an author, a poem

from her pen obtaining the first prize from the Rouen academy. The leading literati and artists of Paris bowed before her beauty and genius. She wrote a French "Paradise Lost," an imitation of Gessner's "Death of Abel," an epic poem, called *La Colombiade*, a tragedy, and minor pieces. Her collected works ran through 4 editions, were translated into several languages, and obtained her honorary membership in 5 academies of learning. She also wrote, in prose, letters during her travels through England, Holland, and Italy, which show her capacity for observation. When Dr. Johnson visited Paris, in 1775, he dined with "the Boccage," as he calls her in his diary.

BOCOHERINI, LUIGI, an Italian composer, born at Lucca, Jan. 14, 1746, died in Madrid in 1806. He left many compositions for the violin, violoncello, and piano-forte. He never composed any thing for the theatre, and his *Stabat Mater* is his only church composition.

BOCCONE, PAOLO, afterward SYLVIO, a Sicilian naturalist, born at Palermo, April 24, 1688, died Dec. 22, 1704. He was a Cistercian monk, and to study natural history visited Italy, France, England, Germany, and many other countries. He left many valuable works, some of which have passed through several editions.

BOCHART, SAMUEL, a French oriental and biblical scholar, born in Rouen, May 80, 1599, died at Caen, May 16, 1667. He came of a Huguenot family, and became, like his father, and his uncle the famous Pierre du Moulin, a Calvinistic minister. He studied philosophy, and, perhaps, theology, at Sedan, or, as others think, at Saumur, and followed Cameron into England in the civil troubles of 1620. While there he laid the foundation for that oriental erudition to which he owes his celebrity. He soon returned to Leyden, where he applied himself to the study of Arabic. He had already become so thoroughly versed in Greek at 14 years of age that he wrote freely in Greek verse, specimens of which were published by Dempster in the preface to his "Roman Antiquities" (1615). Returning to Caen in 1628, he held a public disputation with Véron, a learned Jesuit. The discussion was interrupted by Bochart's sickness, but was continued in epistolary essays for nearly 8 years. The subjects of which it treated embraced the principal heads of controversy between the Protestant and Roman Catholic churches, such as the supremacy of St. Peter, the sacraments, relics, merits, vows, intercession of the saints, the Vulgate translation of the Bible, &c. Bochart, for the rest of his life, devoted himself to the illustration of biblical literature. He now began to write his *Geographia Sacra*, the great work of his life. Next followed his treatise on the animals of the Bible; and in pursuance of the same plan, he was collecting materials for similar treatises on the minerals and plants of the Bible, when his sudden death, while speaking in the academy at Caen, interrupted his labors, and deprived the world of the results.

BOCHIOA, an Indian mythological character indigenous to the valley of Bogota, the son

of the sun, lawgiver, teacher of agriculture, and introducer of the semi-civilization formerly existing there.

BOCHIUS, JOHN, or **BOCH**, a Flemish Latin poet, born in Brussels, July 27, 1555, died Jan. 18, 1609. He travelled in Italy, Germany, Poland, and Russia, and was afterward secretary to the duke of Parma. His poems were published at Cologne in 1615, and much admired by his contemporaries.

BOCHSA, ROBERT NICOLAS CHARLES, harpist and composer, born at Montmédy, département Meuse, in France, in 1789, died in Australia in 1856. When but 7 years old he performed, in public, a concerto on the piano-forte, and before he was 12 had composed symphonies, concertos, overtures, and even a quartet, without having acquired any knowledge of composition. At the age of 16 he began to study the harp, and within 2 years could perform the most difficult pieces on half a dozen different instruments. About this time he was placed in the *conservatoire* at Paris, where he enjoyed the instructions of Mehul in composition; and so rapid was his progress that, at the end of the first year, he obtained the principal prize in harmony. He also continued to apply himself to the harp, and soon acquired an eminence as a performer on it without any previous parallel, and which he enjoyed until his death. His published compositions for it amount to 150 of all sorts, exclusive of 50 studies; and he also published 2 methods for pupils. In 1813 he was appointed by the emperor Napoleon first harpist at his private concerts; and upon the restoration of the Bourbons filled the same office with Louis XVIII. During this period he composed a number of operas for the French stage, many of which were successful in their day, although now nearly forgotten. In 1817 he went to England, where a busy professional career, extending through more than 80 years, awaited him. He published, yearly, numerous compositions for the harp, gave concerts in London and the provinces, directed the oratorios, and, in 1822, became professor of the harp at the royal academy of music, of which institution he was also appointed a life governor. In 1847 he came to the United States with Madame Anna Bishop, with whom he made many musical tours in various parts of the American continent, and whom he finally accompanied to Australia.

BOCK, KARL ERNST, a German anatomist, born Feb. 21, 1809, graduated at Leipsic in 1831, served as surgeon in the Russian army, and after his return was appointed, in 1837, to preside and report over post-mortem examinations at the Leipsic hospital. In 1839 he became professor of anatomy at Leipsic, and, since 1850, he has had charge, also, of the clinical department of the university. His last production, *Lehrbuch der Pathologischen Anatomie und Diagnostik* (Leipsic, 1848), has passed through 3 editions.

BOCKELSON, or **BOCCOLD, JOHANN**. See **JOHN OF LEYDEN**.

BODE, JOHANN ELBERT, a German astronomer, born in Hamburg, Jan. 19, 1747, died in Berlin, Nov. 23, 1826. While a boy, he made a telescope for himself, and converted his father's garret into an observatory; having published in early life a paper on a solar eclipse, and an excellent popular introduction to astronomy, he was, in 1772, chosen astronomer to the Berlin academy of sciences. His "*Astronomical Almanac*," of which 54 volumes appeared at Berlin from 1776 to 1829, is continued by Encke. His *Uranographia* contains observations on 17,240 stars. He was one of those who gave astronomy the hold which it now has on the German mind.

BODE'S LAW is not a law, properly speaking, but simply a mnemonic for remembering the distances of the planets from the sun. To 4 add 3 multiplied by 2 once, twice, thrice, &c., and the sums multiplied by 9,500,000 will give the distances of the successive planets from the sun. This rule fails in the case of Neptune, and it was thus that Adams and Leverrier were misled in their calculations of that planet's distance before it had been observed.

BODENSTETT, FRIEDRICH MARTIN, a German author, born at Peine, in Hanover, April 22, 1819. In 1840 he accepted an engagement as teacher in the family of Prince Gallizin, at Moscow. In 1844 he became professor in a seminary at Tiflis, and after exploring the Caucasus, the Crimea, and Asia Minor, he returned to Germany in 1846, officiated in 1848 as editor of the *Lloyd Austriaco*, published at Trieste, attended the Paris convention in 1849 as representative of the Prussian free trade party, and the peace congress at Frankfort-on-the-Main in 1850, the latter in the interest of the cause of Schleswig Holstein. Subsequently he was editor of the *Weser Zeitung* at Bremen, and in April, 1854, he took up his abode at Munich, where he is one of the poets who cluster round the throne of King Maximilian, who pays him an annual pension of about \$500, while at the same time he officiates as professor of Slavonic languages and literature at the university of Munich. He has translated the works of the Russian poets Pushkin, Kastoff, and Lermontoff, into German, published an interesting work on the nations of the Caucasus, and their war of independence against Russia, of which a 2d and enlarged edition appeared in 1855, and a book, called "Thousand and One Days in the Orient," of which an English translation appeared at London in 1851, and a 2d German edition at Berlin in 1853. A first volume of his more recent poems was published at Berlin in 1856, and his new historical tragedy *Demetrius*, appeared in the same year, and was performed at the theatre of Munich. His most original production is his German version of the Persian songs of Mirza-Shaffy.

BODIN, JEAN, a French publicist, born at Angers about 1580, died at Laon in 1596. After studying law at Toulouse, he repaired to Paris, to follow his profession; but he saw at

once that he could scarcely succeed in competition with such advocates as Brisson, Pasquier, Pithou, and others; and accordingly he devoted himself to politics. In 1576 he published his work, *De la République*, which gained for him a great reputation, and the esteem of Henry III., who, bad king as he was, knew how to appreciate genius. But having suffered in the king's mind by the calumnies of some courtiers, he went to the duke of Alençon, who was then the chief of the party called *les politiques*, who appointed him at once to several offices in his service. He went with that prince to England, where he found his work used as a text book at the university of Cambridge. After the death of his protector, in 1584, he retired to Laon, where he married, and held the office of *procureur*. There, during his leisure hours, he composed a strange book: *La Démonomanie, ou traité des sorciers*, which was printed at Paris in 1587. The following years, he was sent as deputy for the third estate (*tiers état*) of Vermandois, to the states-general at Blois, where he supported several democratic measures. On the death of Henry III., Bodin made Laon, his adopted city, join the party of the league, which opposed the accession of Henry IV.; but a little later, yielding, he went over to that prince. He was carried away suddenly by a disorder resembling the cholera. Beside the 2 works above mentioned, he left several others, which bear evidence of his varied knowledge and boldness of mind; but his treatise, *De la République*, is his best production. He gives in it an exposition of the principles on which government should be founded; and if he does not determine in favor of the republican system, he insists that monarchy should at least exhibit a regard for popular rights.

BODISCO, ALEXANDER, for a long time Russian minister in the United States, born about 1779, of a Protestant family of the lower ranks of the Wallachian nobility, died at Washington, Jan. 28, 1854. While he was yet a boy, his father emigrated to Russia, for the sake of greater facilities for the education and support of his numerous family. The son was very carefully taught French and a handsome handwriting, and early entered the civil service in the department of foreign affairs. There he distinguished himself by his application, and was attached to that part of the imperial chancery which accompanied Alexander in his campaigns. He was next made private secretary to Count Suchtelen, in 1810, and in the following years, when the count as imperial commissioner concluded the convention with Bernadotte, crown prince of Sweden. He also attended Suchtelen during the campaigns of 1813-'14, and at the congress of Vienna. When Suchtelen was appointed ambassador at Stockholm, Bodisco became the secretary of legation. Here he enjoyed the unbounded confidence of his chief, who, on his deathbed, warmly recommended him to the emperor Nicholas. After the death of the ambassador, Bodisco temporarily filled

the place of *chargé d'affaires* at Stockholm until he was appointed to the same office at Washington, and soon after was made minister plenipotentiary, which post he filled for 17 years until his death. He had remarkable financial abilities, and by economy and speculation made a large fortune, which he left to his numerous children. He was married to a lady of Georgetown, D. C.

BODLEIAN LIBRARY, the public library of the university of Oxford, so called from Sir Thomas Bodley, who restored it toward the close of the 16th century, many of the previous collections of books and MSS. having been destroyed during the reign of Edward VI. Beside restoring the building and providing a fund of £2,000 for the purchase of books, he also presented a collection which was valued at £10,000, and left an estate for the maintenance of officers and for keeping the library in repair. For the government of the library he drew up some statutes, which were afterward incorporated with those of the university. The library was first opened to the public Nov. 8, 1602. The liberal example of Bodley was soon followed by the earl of Essex, who presented part of the Portuguese bishop Osorius's library, which had been captured by Essex in 1596, shortly after the expedition against Cadiz. After the death of Bodley, the earl of Pembroke added a valuable collection of Greek MSS., procured by Baroccio, a Venetian. At later dates Sir Thomas Roe, Sir Kenelm Digby, the "learned Selden," Gough the antiquary, and Archbishop Laud, conferred donations of valuable Greek, Oriental, and German MSS. to this magnificent library. The library, rich in rabbinical lore, of the Hebrew scholar Oppenheim, a great collection of eastern MSS., of early editions of the Bible, original editions of ancient and classic authors, together with 50,000 dissertations by members of foreign universities, and an extensive collection of medals, coins, prints, &c., were also subsequently deposited in this library. In 1809 Clarke, the traveller, gave to it some rare Greek and Latin MSS., including a Plato from the isle of Patmos. In 1818, an exceedingly valuable collection of Hebrew, Greek, and Arabic MSS., procured from Venice, was added, together with a portion of the famed library of Richard Heber (1834), and lastly, the rare books, MSS., and coins of the scholar, antiquary, and Shakespearean commentator, Francis Douce. This renowned library, in fine, is rich in many departments in which other libraries are deficient, and forms altogether the noblest collection of which any university can boast. The library is constantly increasing by donations, by copies of every work printed in the United Kingdom, as well as by books purchased from the fund left by Bodley, by fees received at matriculation, and by an annual payment of all persons (servitors excepted) who have the right of admission to the library. In Jan. 1849, the number of printed volumes was, according to a report presented to the house of commons, about 220,000,

and of MSS. about 21,000. During the years 1826-'46 the average annual addition of the books was about 4,480 volumes; so that, upon this basis, the library must contain, at the present day, at least 260,000 printed volumes. The first catalogue of the printed books, by Dr. James, appeared in 1605. This was followed by various other catalogues. Rev. Dr. Bannin's catalogue of the printed books was completed in 1843, 8 vols. folio, and a large supplemental volume was printed in 1851, containing the additions up to the end of 1847.

BODLEY, SIR THOMAS, the founder of the Bodleian library, born at Exeter, March 2, 1544, died at Oxford, Jan. 28, 1612. At the age of 12, he went to Geneva with his father, who, being a Protestant, went into voluntary exile during the reign of Queen Mary. At the then newly founded university of Geneva, young Bodley received instruction in the dead languages and divinity. On the accession of Queen Elizabeth, in 1558, he returned to England with his family, entered the university of Oxford, graduated there in 1563, and was elected fellow of Morton college the year following, and filled various offices in the university until 1576, when he commenced 4 years' foreign travel. Returning, he went back to Oxford, was made gentleman usher to Queen Elizabeth, and, in 1585, forfeited his fellowship by marriage. Queen Elizabeth successively employed him, after this, in various embassies,—to Denmark, Brunswick, Hesse, Henry III. of France, and the Hague. At the last-named place, where he was admitted one of the council of state, taking place and voting next Count Maurice, he remained 5 years, but was again sent thither, not finally quitting Holland until 1597. Abandoning the public service, he immediately set about restoring, or rather founding anew, the public library at Oxford—now called the Bodleian, from his name. He was knighted on the accession of James I., and honored with a public funeral on his death. His autobiography was published at Oxford in 1647.

BODMER, GEORG, a Swiss mechanic, born at Zürich in Dec. 1786. Being apprenticed to a mechanic in Thurgau, he invented screw or cross wheels in 1803, and made important improvements in the machinery for wool-spinning in 1805. He established himself at Küssnacht, where, in 1808, he invented a 1-pound cannon for firing bombs, which exploded when they struck any object. He settled in 1809 at St. Blasien, in Baden, devoted himself to the manufacture and improvement of fire-arms and industrial machinery, and received commissions from France, Baden, and Switzerland. In 1822 he planned the bath at Schinznach, in Switzerland. In 1824 he went to Manchester, in England, where he applied many of his mechanical improvements upon a large scale. He constructed at Bolton an immense water-wheel 61 feet in diameter, perfected locomotives, and during 20 years gained more than 80 patents for various machines and instruments for turn-

ing, boring, and rolling. In 1847 he returned to Austria, where he was engaged in the construction of railroads.

BODMER, JOHANN JAKOB, a German scholar, born at Greiffensee, in Switzerland, July 9, 1698, died in Zürich, Jan. 2, 1788. A knowledge of the classics and of English and Italian literature, opened his eyes to the meagre and insipid character of the German literature of his own time, and in union with some other literary young men, he issued, in 1721, a periodical, entitled *Discourse der Mäler*, in which many German poets were summoned before the tribunal of a new criticism. He formed a new literary school in opposition to the French school of Gottsched. The taste of Bodmer for English poetry, classical literature, and the earlier German authors, exercised a very happy effect. He officiated during 50 years as professor of history at Zürich.

BODONI, GIAMBATTISTA, an Italian printer, born at Saluzzo, in Piedmont, Feb. 16, 1740, died in Padua, Nov. 20, 1818. After serving some years in the printing establishment of his father, he went to Rome as a compositor for the press of the Propaganda. While there he made himself master of several oriental languages, and restored and arranged the types of those eastern alphabets that had become disordered. In 1766 he became superintendent of the royal press at Parma, which Giambattista soon made the most celebrated in Europe. The beauty of his type, ink, and paper, has never been excelled, but the intrinsic value of his editions is rather inferior to their outward splendor. His *Iliad*, however, and his Greek letters, are the most perfect imitations of the originals that have been yet attempted, and his editions of the Greek, Latin, Italian, and French classics, are, on the whole, magnificent monuments of his ability and taste. He was a member of several Italian academies, and a knight of several celebrated orders.

BOECE, НЕСТОЯ. See BORTHUIS.

BOECKH, AUGUST, a German philologist, born Nov. 24, 1785, at Carlsruhe, studied in Halle, as a pupil of Wolf, became professor in Heidelberg in 1807, and in Berlin in 1811, where he still continues. In one of his earliest works, the "Metres of Pindar" (Berlin, 1809), and in his edition of Pindar (2 vols. Leipzig, 1811-'22), he succeeded in an almost perfect restoration of the text, in establishing the rules according to which the verses of Pindar are constructed, and the kind of music by which they were accompanied, and in explaining the elements by which the poetical effect of these songs was produced. In his work *Die Staats-Haushaltung der Athener* (Berlin, 1817, 2 vols.), he gives an accurate and lively picture of the administration and political economy of ancient Athens, in which so many dark points are cleared up, that we almost seem to see the Athenians living before our eyes. The 2d edition (1851) is even richer and more complete. His work *Metrologische Untersuchungen über*

Gewichte, Münzfusse, und Mases des Alterthums (Berl. 1838), succeeds in solving the almost desperate task of giving, by a careful comparison of all historical sources and monuments, an evidently correct knowledge of the chief measures, weights, and currencies of the Greeks, Romans, and other ancient nations. His *Urkunden über das Seewesen des attischen Staats* (Berl. 1840) is an unexceptionable history of the navy of Athens and the marine achievements of that city. His edition of the *Corpus Inscriptionum Græcarum* (vols. i. and iii., Berl. 1824-'53), undertaken in concert with Johann Franz, at the instance of the Berlin academy, shows the meaning of all the relics of the ancient Greek inscriptions, of which many were very unintelligible. Of his minor writings, almost all are characterized either by new results or by ingenious combinations of facts, and a clear classical style. He does not limit his researches to Greek and Roman antiquity, but has contributed toward clearing up the darkness of oriental history, and to the appreciation of the works of Leibnitz and Frederic the Great. As a philologist he has founded a new and better school, called after his name. It has succeeded in giving the completest possible picture of antiquity in all its bearings and conditions, in illustrating ancient history, geography, religious, social, and political institutions, and upon this basis in explaining the real meaning of the old classical authors; while the school before him, called the "school of verbal critics," was almost exclusively bent on restoring, by sagacious conjectures and diligent comparisons of the different readings of the manuscripts, the original text. This latter school was entirely done away with by that of Boeckh, which has thus given a useful scope to the study of classical philology in Germany, England, France, and America, which before had to some extent been unfavorable to the spirit of independent thought. Since Boeckh the real nature of ancient life has been better understood, and exercises a more benign influence upon modern society. Boeckh is eloquent in his delivery, his appearance is noble, his political opinions are moderately liberal. The 2d edition of his "Public Economy of the Athenians" was translated into French by Laligant in 1828; into English, in the same year, by Sir G. O. Lewis, late editor of the "Edinburgh Review." An English translation of the 2d edition was made by an American scholar, Mr. Anthony Lamb, and brought out in 1857, simultaneously in Boston and London. Among Boeckh's more recent publications his essay on the cosmical system of Plato (*Untersuchungen über das kosmische System des Plato*), which appeared at Berlin in 1862, must be mentioned.

BOEHM, or BOEHME (often incorrectly written BEHMEN), JAKOB, a German theosophist or mystic, born in 1575, at Altseidenberg, near Goerlitz, in Silesia, died at Goerlitz, Nov. 27, 1624. The son of poor peasants, his early education was very deficient; he was apprenticed to a shoemaker;

travelled for many years as a journeyman; and by unceasing efforts made himself familiar with the current theological literature. Even as a boy, while tending the herds of his native village, the constant intercourse with nature deeply impressed his contemplative mind. Exuberant fertility of imagination, a deep-rooted love of the mysterious workings of the divine power, enthusiastic warmth of feeling, a rare power of intuition, and withal a want of severe mental discipline, rendered him subject to hallucinations, during which he imagined himself to be in direct conversation with the Divinity. From the rude theological controversies of his time, he fled to the pure ethereal regions of intuition, where, in the ecstasies of feeling, elevated to sublimity, he found an intense mental enjoyment. Having returned from his travels, he set up a shoemaker's shop at Goerlitz, in 1594, and married the daughter of a butcher. He led a plain and quiet life, but his visions continued until, in 1610, the desire to disclose to mankind the path of eternal felicity, impelled him to publish the mystical transports of his soul. In 1612 he published his first book, *Aurora, oder die Morgenröthe im Aufgang* (Aurora, or the Rising of the Sun), in which he proposed "to light a torch for all who are longing for truth." In crude, enthusiastic, and figurative language, almost unintelligible to sober modern thought, this book contains the deepest philosophical sentiments on God, nature, and mankind, and shows the author to have been conversant with most important works of contemporaneous theological literature. It was violently denounced by theologians, and the municipal authorities even attempted to silence the bold shoemaker, but the success of his first work was so decided as to encourage him to further effort. In 1619 he, therefore, published other writings, among which were "Description of the Three Principles of the Divinity," and "On True Penitence and Tranquillity." The consequence was his banishment from the city. He went to Dresden, where the prince elector endeavored to obtain from him the philosopher's stone, taking it for granted that he was endowed with supernatural knowledge. Having successfully defended his opinions in a public discussion with eminent theologians, he went to Silesia, and obtained the abrogation of the decree of banishment just in time to return to his home and die. Not even then did the hatred of his theological adversaries cease. They refused to allow his remains a Christian burial, but were compelled to do so by the civil authorities.—It is very difficult to obtain a clear and brief idea of Boehm's conceptions from the quaint and obscure metaphors which are so intimately blended with his thoughts, that it may well be doubted whether he himself was able to discern between the substance and the fantastic form of his effusions. His views, if closely analyzed, bear a striking resemblance to the fundamental doctrines of Hegel's speculative system. The Divinity, according to him, is the

eternal unit, the pure substance undefined by any qualifications, the unfathomable (*Ungrund*), as incomprehensible to human understanding as the "absolute nothing," because it is specific qualities only by which the human mind is able to perceive phenomena, and in the Divinity there are none. But this pure substance, reflecting itself, becomes its own object (*urselbstendend*), a self-conscious reality. Out of the eternal affirmation the negation detaches itself; by disuniting only, the unit becomes conscious of itself, "the eternal blissful stillness reveals itself in the word." This self-condensation, or self-qualification of the original substance (divinity) is nature (*das Creatürliche*). The creaturely is the self-revelation of God. But the negation, by which the Divinity is enabled to reveal itself, is, at the same time, the evil principle. "God has existence only through the devil," says Boehm, meaning that the motionless, eternal, and infinite substance obtains reality only by the principle of limitation or definition. Yet in nature only this principle is the evil one, because there the negation has an existence of its own, while in the fulness of the Divine Being it is only the attribute of perfection, the moving element, the *everys* of the inert unqualified substance. In God the principle of limitation is a holy glow of love (*heilige Liebesgluth*), but in nature it is the destructive fire of wrath (*verzehrendes Zornfeuer*). The principle of negation is not an absolute, inactive principle; it tends to deny itself. The negative negation only is self-conscious affirmation, eternal bliss. Thus man, led to evil by the negative principle of liberty, should, as a self-conscious being, return to the absolute good. Some few of the least enigmatical propositions of Boehm may serve as a specimen of the most lucid passages of his writings. "The divine substance is the abyss (*Abgrund*) of the creaturely. The entirety of substance is God. How could man be God's son, if his substance were different from that of God? God has created all that is from nothing, and himself is this nothing, as a self-immanent love, in which there is no affection. Angel and devil are all the same in revelation (*im Urbund alle ein Ding*). We do not know any thing of God, for he himself is our intuition and knowledge; our soul is woven into the eternal band, and if it attains the love of God in the light, it may then intuitively view nature and God, the kingdom of heaven and hell." Sentiments like these are perhaps intelligible; but, were it not for them, it is scarcely possible that the abstruse and chaotic lucubrations of Boehm could ever have been seriously considered and analyzed by the wisest thinkers. However this may be, Boehm's writings found many admirers in his time, not only in Germany, but in England, where a religious sect was built upon them. In 1697, Jane Leade, an enthusiastic admirer of Boehm, founded a society for the true interpretation of his works (Philadelphists), and John Pordage was the profoundest expounder of Boehm. A

new edition of Boehm's works was published by Schiebeler (Leipsic, 1831-'46). The best English translation of them is that of William Law (2 vols. 4to. Lond. 1764).

BOEHTLINGK, OTTO, a Russian philologist, of German descent, learned especially in the oriental languages, born at St. Petersburg, May 30, 1815. He studied first at the gymnasium of Dorpat, and then at the university of St. Petersburg. He had acquired a knowledge of Arabic and Persian, when, becoming acquainted with Bollensen, a pupil of Ewald, he was induced also to undertake the Sanscrit, and studied for several years at the universities of Berlin and Bonn. Returning to his native city in 1842, he became imperial counsellor, and member of the academy of sciences; and from that time has devoted himself to literary occupations, especially to the preparation of grammars and lexicons of the Sanscrit, Turkish, and other eastern languages. His works are distinguished for their accuracy. He has contributed many articles to the publications of the Russian academy of sciences.

BŒOTIA, a country of northern, or upper Greece, above the Peloponnesus, and next to Attica, on the northward. It extends across the mainland, from the Sinus Opuntius and the straits of Egripo, which divide it from Eubœa, or Negropont, to the Sinus Corinthiacus, or gulf of Lepanto. It is bounded N. by the countries of the Epionemidian and Opuntian Locrians, N. E. by the narrow seas and straits of Egripo, S. by Attica and the waters of the gulf, W. by the Phthiotis. It is a country of deep basins, surrounded by mountain chains, allowing no egress to the accumulated waters of the lakes and marshy valleys, except by subterranean outlets, which are termed *καταβορρα* by the modern Greeks. The basins are occupied by great marshy flats and meadows, which are overflowed half of the year, and converted into vast lakes, teeming with fish and wild fowl, and for the other half covered with rich vegetation, and dangerous for the low fevers generated by the pestilential miasmata of the stagnant waters, the alluvium, and the decaying vegetable matter, which cause their extraordinary fertility. The principal of these is the great Copaic lake, into which the Bœotian Cephissus, the largest river of that portion of Greece, discharges its waters, having no visible outlet, but passing through deep underground channels, under Mount Onemis, Cyrtous, and Ptons, and falling into the bays, modernly called Scropo-neri, Larnus, and Armyra, near to the ancient sites of Anthedon, Larymna, and Lileæ, on the shores of the Euboic frith, into which they rush as if new and original streams, bursting out of large sources in the mountain sides—a formation by no means unusual in limestone countries, which always abound in caves and subterranean rivers. Its principal streams are the Asopus, now the Parasopia, which divides it from Attica, on the south-eastern frontier, the Cephissus, mentioned above, now called the Apostolia, and the Melas, which is the modern Mauropotamo, or Black river, so called from the transparency of its

clear deep waters, both which rivers flow into the marshes of the Cephissic basin, and swell the Cupaic lake. Beside these, there are numerous other torrents flowing from the mountains, but principally, like those already named, having no direct outlets into the sea, and either disappearing through subterranean channels, or escaping by percolation through the stony soil of the tarns in which they terminate. Boeotia was always famous for her meadow lands and pastures, and was the most equestrian of the true Greek states; her wide plains, or rather level valley bottoms, particularly those of the Cephissiotis and Thebaia, being well suited to the breeding and raising of horses, though not so much so as the more extended levels of the Histæotis, of Thessaly and of Thrace, to the north-eastward. The fertility of the soil can be conceived from the fact of 900 grains being found on a single cob of maize by Col. Leake, the Grecian traveller, whose researches have done so much to clear up the antiquities of that most interesting country, and from his observation, that the canes grow so large that, when plastered with mud, they form the general material of the cottage walls. The principal mountain is Oithæron, the highest peak of which, Mount Elatea, immediately above the inner recess of the gulf of Corinth, is 4,800 feet in height, but the whole territory is broken with irregular spurs and offsets from the great mountain chains of Parnassus and Ceta, on the northern and north-western confines of the state, one of the most famous of which is Helicon. The capital of Boeotia was the city of Thebes, known as the seven-gated Thebes, and famous for its siege, in the heroic or ante-historic ages, by the seven chiefs, who have given the name to one of the tragedies of *Æschylus*. The other principal towns were Plataea, Orchomenus, Chæronea, Coronea, Lebæda, and Aulis, where the expedition of the Atreides against Troy lay wind-bound, until the goddess Diana was appeased by the virgin blood of Iphigenia. In ancient mythologic legends, Boeotia was extremely rich; the tragic tale of the crimes of the Labdacidae of Thebes, Laius, Œdipus, Eteocles, Polynices, Creon, Adrastus, and the heroines Jocasta, Antigone, and Electra, being second only, for solemnity and horror, to that of the Mycenaean Tantalidae. It was on Oithæron that Bacchus, and his train of satyrs and Bacchantes, held their wildest revels; that Actæon, converted to the stag which he hunted, for his involuntary intrusion on the bath of Diana, was devoured by his own hounds; and that Pentheus was torn limb from limb by the votaries of Bacchus, whose rites he had slighted. It was hard by the capital that flowed the stream of Dirce, into which the cruel wife of Lycus was transformed, after her punishment by Zethus and Amphion, sons of Antiope, for her barbarity to their mother, one of the mortal mistresses of Jupiter. Nor was Boeotia less celebrated in the historic than in the heroic ages; for, in many respects, as regarded the Greek,

and afterward the Roman and Asiatic wars, she was what Flanders has been to Europe, the general battle ground of the conflicting nations. In the Persian wars, the Boeotians sided, for the most part, with the Persians; and on the plain of Plataea was fought the decisive battle by Pausanias, at the head of 110,000 Peloponnesians, Athenians, Argives, Mantineans, and Greek allies, in which, after 3 days' severe fighting and manœuvring, he utterly defeated the Persian host of Mardonius, which, with the Boeotians and other Medizing Greeks, was not less in number than 800,000 men, and put an end to all oriental invasions of the sacred soil of Hellas. During the Peloponnesian wars, the Boeotians played, on the whole, but a secondary part, owing to the dissensions of their leading communities among themselves, which precluded them from the possibility of acting in concert, as became the members of a great state; consequently, they were alternately at war with Athens, and with the Peloponnesians, and, notwithstanding the splendid exploits of Pelopidas and Epaminondas at Leuctra, on their own soil, on the banks of Eurotas, within sight of the streets of Sparta, and, again, at Mantinea, on Lacedæmonian earth, they effected nothing for themselves, or for Greece, although, beyond doubt, they broke the power of the Spartans, and destroyed forever their superiority over the Hellenic states. That, however, was not even a questionable advantage, for the Macedonian kingdom was already on the increase, and, had Lacedæmon possessed the power, as clearly she possessed the will, to stand in arms side by side with Thebes and Athens—

When that dishonest victory,
At Chæronea, fatal to liberty,
Killed with report that old man eloquent—

it is more than doubtful whether Philip, or Alexander either, would have ever wielded the staff of a Panhellenic command. During the Macedonic wars, she played a noble, although an unsuccessful part, and, in revenge for her resistance to his rising power, Alexander razed the capital to the ground, bidding his ministers of havoc spare only the house of Pindar, whom he affected to hold in honor, for the sake of the Boeotian muses, who once dwelt sublime among the mountain glades of Helicon. Twenty years later, Thebes was restored by Cassander, when it is said that the Athenians lent their aid in rebuilding the walls. It was, however, twice afterward taken and sacked by Demetrius Poliorcetes, and was, at a still later period, utterly impoverished and ruined by the rapacity of Sylla, who fought a yet greater battle, on the same bloody field of Chæronea, than any one of the conflicts which had preceded it on the same ground, against Taxiles, the general of Mithridates; a battle as remarkable for the generalship which gained it, as for the disparity of numbers. From this period, Boeotia shared the fortunes of the rest of Greece, which followed those of the Roman empire, throughout her decline and fall; and during the middle

ages was the scene, first, of Genoese and Venetian colonization and contest with the Mussulmana, then of Mohammedan subjugation, of the despotic rule of Ali Pasha, and of some of the sharpest fighting of the war of the Greek liberation. Bœotia is still famous for her mild and misty atmosphere, to which the Athenians attributed the proverbial dulness of her people; which dulness, however, seems to be pretty thoroughly contradicted by such splendid examples as Pindar, Pelopidas, Epaminondas, and Plutarch, her natives and citizens.

BOERHAAVE, HERMANN, the most celebrated physician of his day, born at Voorhout, near Leyden, in Holland, Dec. 18, 1668, died at Leyden, Sept. 23, 1738. His father was a clergyman, and the son was destined for the same calling. He received a very careful education, and manifested much ability in his studies. At the age of 16 Boerhaave entered the university of Leyden, where he studied under Gronovius, Ryckius, Trigland, and other eminent professors, and obtained the highest academical honors. In 1690 he received his degree in philosophy. On that occasion he delivered an inaugural dissertation on the distinction between mind and matter, *De Distinctione Mentis a Corpora*, in which he discussed and condemned the doctrines of Epicurus, Hobbes, and Spinoza. In this dissertation he maintained that the doctrines of Epicurus had been completely analyzed and refuted by Cicero; and the arguments were deemed so excellent, that a gold medal was given to him by the city, as a token of the estimation in which his labors and opinions were held. On the death of his father, Boerhaave was left without the means of living, and was compelled to support himself by teaching mathematics. By the advice of his friend Vandenberg, the burgomaster of Leyden, he applied himself to the study of medicine, for which he had always had a predilection. In 1693 he obtained his degree of doctor of medicine at Harderwyck, in Guelderland, and immediately entered on the duties of his profession. The practice of medicine did not, however, absorb all his time, or cool his ardor in the pursuit of science. The works of Hippocrates, and those of Sydenham, were carefully perused, and all the most eminent writers on medical science became familiar to his mind. His merits soon became conspicuous, and in 1701 he was appointed by the university of Leyden to supply the place of Drelincourt, as lecturer on the institutes of medicine. His inaugural discourse on this occasion was entitled *De commendando Hippocratis Studio*. Being deeply imbued with admiration for that great physician, he recommended to his pupils the study of his works as the best source of instruction. Anatomy was not much studied by Boerhaave; but he was fond of chemistry, botany, and mathematics, and these sciences were much consulted in his medical investigations. In 1709 he was appointed successor to Hottot, in the chair of botany and medicine, and continued to attract attention in his pro-

fessional capacity. Under his influence, additions were made to the botanical garden of Leyden, and he published numerous works descriptive of new species of plants. In 1714 he was appointed rector of the university, and in the same year succeeded Bidloo in the chair of practical medicine. Whatever branch of science he professed, was sure to be improved by him in some of its details. While professor of practical medicine, he had the merit of introducing into modern custom the system of clinical instruction, in which the physicians and surgeons of hospitals visit their patients several times a week, in the presence of numerous medical students, examining disease, and explaining proper modes of treatment adapted to each case, as they proceed together from one bedside to another. This had been customary with the ancients, but had been neglected in modern times, until revived by Boerhaave, early in the 18th century. In 1718 he was appointed to the chair of chemistry, and here again he left the impress of his genius, in his celebrated "Elements of Chemistry." His fame had now spread over the whole world. In 1728 he was elected into the royal academy of sciences of Paris, and 2 years later, into the royal society of London. In 1729, declining health induced him to resign the chairs of chemistry and botany, and in 1731 he resigned the rectorship of the university, on which occasion he delivered a discourse on the honorable duties of the physician, *De Honore Medici, Servitute*. Beside his active duties as rector of the university of Leyden, and professor of chemistry, botany, and medicine, Boerhaave was much consulted as a practical physician. He was simple and economical in his habits, and when he died, he left a fortune of 2,000,000 florins to his only surviving daughter.—The genius of Boerhaave raised the fame of the university of Leyden as a school of medicine, which attracted students from all parts of Europe. When Peter the Great went to Holland in 1715, to become familiar with maritime affairs, he also had recourse to Boerhaave for instruction. From the time of Hippocrates, no physician had excited so much admiration as Boerhaave. His personal appearance was simple and venerable; to uncommon intellectual powers he united gentleness, benevolence, and amiable manners. In lecturing, his style was eloquent and graceful; his ideas clear, and his delivery perfect. He possessed an excellent memory, and was an accomplished linguist. He was fond of music, and had concerts weekly at his house. He was of a religious turn of mind, and usually devoted an hour early in the morning to reading the Scriptures. He never regarded calumny nor detraction; but maintained that "the surest remedy against scandal is to live it down by perseverance in well doing, and by praying to God that he would cure the distempered minds of those who traduce and injure us." The city of Leyden raised a splendid monument to his memory in the church of St. Peter, inscribed

"to the salutary genius of Boerhaave," *Salutifero Boerhaavii genio sacrum*, and on which was engraved his motto, *Simplex sigillum veri*. He led a very active and well-regulated life, and though of a delicate constitution, did an immense amount of work. His views of medical science were far from being perfect, but he labored diligently to improve the science as he found it. The list of his works shows the immense activity of his mind, and many of his writings are still held in repute, although the science has advanced beyond the theories which he propounded.

BOERS, or Boers (Dutch *boer*, a peasant or farmer), the designation by which the Dutch colonists of the Cape colony have become known even to history, since within the last 10 or 12 years 2 independent republics, equalling in size the largest of the United States, have been founded by them. The first Dutch settlements in southern Africa were established in the beginning of the 17th century. At that time the Netherlands were the ruling maritime power, and their colonies in southern Africa were growing up in proportions at least equal to those of the American colonies of England. During the wars of Louis XIV. of France against the Netherlands, there was even a time when the thought of a wholesale emigration of the Dutch to the Cape of Good Hope, there to establish a new republic, was seriously entertained. But during the 18th century the colonizing power of the Dutch gradually slackened, and the adventurous spirit of the settlers stagnated. As the influx of new elements from Europe diminished, the original settlers of the Cape colony developed a peculiar character of their own, in which the steadiness and deliberation of the Dutch were singularly blended with the qualities called forth by constant intercourse with virgin nature and savage tribes—daring recklessness, unconquerable energy, distrustfulness of all innovations tending to disturb a state of society which had been established by immense toil and danger. Such were the Boers when, in 1814, the Cape colony, after several political changes, became definitively a British possession. The Boers could never be reconciled to this change. The obstinacy with which they clung to their customs and traditions was an insuperable barrier between them and their new rulers. Always considering the British as invaders, they maintained a secret but constant opposition against all efforts to Anglicize the colony. The inconsiderate policy of several governors, who were unable to appreciate the value of what the Boers had already accomplished for the civilization of the country, tended to strengthen that opposition. The vain attempts of the British authorities and missionaries to manufacture loyal subjects out of the savage Caffres, by treating them like civilized nations, or baptizing them, disgusted the Boers, who, by a long intercourse with those savages, had become acquainted with their treacherous character.

But when the British rulers went so far as to take sides with the Caffres against the Boers whenever the latter endeavored to protect themselves, the disgust turned into indignation. The emancipation of the negro slaves (1838), which threatened to overthrow the entire domestic system of the Boers, and the retrocession by government of the neutral eastern frontier district to the Caffres, in 1835, broke their patience. Like the Israelites in Egypt, or the Mormons in America, they resolved upon carrying their household gods to some distant portion of the country, where they might establish a community according to their own habits of life, independent of their oppressors. The *Trekken* or emigration of the Boers began. Port Natal, or Christmas Harbor, was to be their promised land. As early as 1835 the first bands, led by Tricheard, of Albany, crossed the Orange river, but, being unacquainted with the few passes which lead through the almost perpendicular walls of the Quathlamba (*Drakenberg*) mountains to the Natal country, they went further to the northward than they had intended. Part of them settled near the Zoutpansberg (Salt-pan mountain); another part, led by Orich, near Delagoa bay, where they were soon destroyed by malignant coast fevers. A third band, which followed in Aug. 1835, was attacked by the Matabelees Caffres, and obliged to fall back on the Modder river. Having been reinforced by other emigrants, they again advanced under the leadership of Gerrit Maritz, and repulsed the Matabelees, Jan. 17, 1836. Though still longing for Natal, they settled down in the Orange river district, and organized a patriarchal commonwealth under Pieter Retief. Meanwhile a small British colony had been established at Port Natal by Capt. Gardner, who abandoned it as hopeless in 1836. The remaining colonists called on the Boers to unite with them, and in 1837 Retief with his followers crossed the Quathlamba mountains. But at an interview with the chief of the Zulu Caffres, he and his companions were treacherously slain. The remnant of his followers now turned in a southerly direction, founded the settlement of Pieter Maritzburg, and, rallying under the lead of the heroic Pretorius, utterly defeated the Zulus, Feb. 1, 1838. A Batavo-African republic was now organized by them, but their trials were not yet ended. In 1840, Governor Napier by proclamation denied their right to form an independent community, even beyond the boundaries of the British possessions. Their protestations were not heeded; in 1842 a small British force was landed, which the Boers had almost succeeded in starving out, when reinforcements arriving, compelled the Boers to retire from the coast and to accept the amnesty offered to them in exchange for their recognizing the British sovereignty. However, many of them, unwilling to submit, recrossed the mountains and settled in the Vaal region. The British, having possession of Natal, at once began to

disturb the traditional rights of the Boers. A homestead of 3,000 acres from the public lands had always been considered the necessary outfit of every head of a family among the Boers; yet, no sooner had the British officials regained their authority than they began to survey the land and curtail the allotments. The consequence was, that again a large portion of the Boers migrated northward beyond the Klipp river, then the northern boundary of Natal. For 8 years they struggled against the Zulus, and not one soldier was sent by the government for their protection. When, at length, in 1845, they had overcome the resistance of the Caffres by their unaided efforts, the colonial government immediately stepped forward and proclaimed the Buffalo river as the northern boundary of Natal, thus once more subjecting the Boers to British rule. Exasperated by these systematic annoyances, the Boers openly resisted the civil officers sent among them, and were immediately declared traitors. Their only reply was emigration to the Vaal country. Smith, the governor-general, perceiving the blunders of his subordinate at Port Natal, attempted to retain the Boers by promising them full redress of their grievances, but it was too late. Similar events followed beyond the Quathlamba. The bands, led by Pretorius, had settled in the vicinity of the Griquas and Bechuanas, but, Feb. 3, 1848, the colonial government annexed, by proclamation, the Orange river sovereignty to the Cape colony, under the pretext of protecting the savage Griquas against encroachments on their territory. The Boers took to arms, and, June 17, Pretorius drove the British garrison from Bloemfontein. But, Aug. 22, Gov. Smith crossed the Orange river with a large force, and, on Aug. 29, defeated the Boers near Boomplaat, after a long and obstinate resistance. Pretorius, and the majority of his followers, unwilling to submit to the British, migrated to the north, beyond the Vaal river, and there founded the Transvaal republic. Some 12,000 Boers remained in the Orange river country, but although subdued by force, they preserved their hostile feeling against their conquerors. The attempt to introduce convicts into the colony was so energetically resisted that the government was obliged to desist. At length, when the Caffre war, begun in 1851, had taught the government that a firm and united action of the entire white population would be indispensable in order to save southern Africa for European civilization, wiser counsels began to prevail, and in 1853 the relinquishment of the Orange river country to the Boers was resolved upon. On Feb. 23, 1854, this act was consummated, and the Orange river republic recognized as an independent state by England. Since that time the 2 sister republics of Orange river and Transvaal have rapidly gained strength and power, and may now be considered as the vanguard of advancing civilization, perhaps as the germ of a future South African confederacy

of independent republics.—The ORANGE RIVER REPUBLIC is bounded S. by the Orange river, W. and N. by the Vaal river, E. by the Quathlamba or Drakenberg mountains. It extends 875 miles N. and S., from lat. 27° to 31° S. and 290 from W. to E. Its area is vaguely estimated by English authorities at 70,000 sq. m., but, according to the calculations of the geographer Petermann, is only 49,037. About $\frac{2}{3}$ of this country is inhabited by white men, the number of whom is set down at 15,000. The mountainous eastern section (about $\frac{1}{3}$) is inhabited by various Caffre tribes. The predominating character of the country is that of a high table-land, its average elevation above the level of the ocean being about 5,000 feet. Immense "flats" or prairies, excellent for grazing purposes, fill up the settled portions of the republic. At the Cape it is generally called "a heavy grass country." It is abundantly watered by numerous creeks and water-courses, which might easily be applied to irrigation, or to industrial purposes. The Boers, being principally cattle breeders, have not yet developed the agricultural resources of the country to any considerable extent. Coal and iron have been found in many places; also, gold on the Caledon river, and in consequence of this discovery the colony was threatened by a rather violent attack of the gold fever in 1854; but it appears that the "nuggets" found were not large enough to be permanently attractive. The climate is dry, temperate, and salubrious, much more so than elsewhere in the same latitude. Excellent roads have been constructed by the Boers on the principal routes communicating with the Cape colony and Port Natal. The republic is divided into 4 districts, viz., Caledon or Smithfield district, Bloemfontein, Winburg, and Harrysmith or Vaal river district. The principal towns are: Bloemfontein, the seat of government, containing 200 houses, 4 churches, public schools, a newspaper office, a club-house, and a theatre; Smithfield, on the Orange river, with many large stores; Winburg, the former capital, containing 60 houses; Harrysmith, the key of the Port Natal road, and the centre of what is to become the principal agricultural district, no irrigation being required there. The political organization is democratic. An elective president is the chief magistrate, but congress (*Volksraad*) has all legislative powers. On the same principle the districts are governed by *Landdroests* (governors) and *Heemraden*. J. T. Hoffmann is the present chief magistrate. Public education is in an excellent state, all the districts being provided with public schools, churches, &c. Altogether, the Orange republic promises to become of great importance for the future of Southern Africa, especially as it is in direct communication with the British colonies.—THE TRANSVAAL REPUBLIC, extending from lat. 28° to 22° 30' S., is bounded E. by the Quathlamba mountains, S. by the Vaal river, W. and N. by the Limpopo river, and its tribu-

tary, the Meriqua river. Its area, estimated at 50,000 sq. m. by Stuart, is not less than 80,226 sq. m., according to Petermann. That it is considerably larger than the Orange republic is shown by a single glance upon the map. The physiognomy of the country is nearly the same, viz., an elevated table-land, intersected by parallel mountain ranges in the east. The soil, consisting of sand, clay, and loam, is more fertile than that of the Orange country. Its rolling prairies are covered with excellent tall grass, interspersed with shrubs and magnificent trees. In the mountainous region, primeval forests are frequently met with. The climate is similar to that of southern Europe. Its salubrity is proved by the large number of very old people, and by the rapid natural increase of the population. All European and many tropical vegetables are grown without difficulty. Groves of orange-trees are found in the vicinity of many settlements. Maize, pumpkins, water-melons, sweet potatoes, tobacco, sugar-cane, fruit of all kinds, and grapes are raised in sufficient quantities for home consumption. Apple, pear, and peach-tree cuttings bear fruit within 4 years, grape-vines within 2 years. But these advantages are all but neutralized by the difficulty of communication with the sea-shore. It takes 3 weeks to reach Port Natal from the distant settlements of the Transvaal. The rivers, of which the country has a good number, are not navigable, though some of them may be improved. Grasshoppers are a constant plague to the farmer, while flies and other venomous insects often destroy hundreds of cattle. The form of government in the republic is a pure democracy. A volksrad of some 60 members, elected by ballot (every white man of 21 years being entitled to vote), meets 4 times every year at different places. This body unites all legislative and executive powers. It appoints for each district or parish (the number of districts being equal to that of the churches) military and civil officers, viz., commanders-in-chief, commanders, field-cornets (colonels, majors, and captains), *landdrosts*, and *heemraden*. The number of commanders-in-chief, in 1852, was 4, of whom the first was the celebrated Pretorius, the terror of all Caffredom; the second, Potgieter, one of the founders of the republic. Both died in 1853. The *landdrosts* have administrative as well as judicial powers; they and their messengers are the only salaried officers. There are no taxes, the expenses of government being raised by the granting of traders' licenses, &c. Every white man is entitled to a homestead of 8,000 acres from the public lands. Slavery, properly speaking, has no legal existence, but the Boers keep a number of semi-civilized Hottentots as laborers and herdsmen. The institution is in the strictest sense a patriarchal one, more so than anywhere else in modern times. The number of laborers which every settler may hold on his property is restricted to 5 or 6 by custom, if not by law. The whole number of

white inhabitants was set down at 40,000 in 1852. The principal settlements are: Potchefstroom, containing 100 houses, and 500 or 600 inhabitants; Rustenburg, with 80 houses and a church; Orichstadt, 20 houses and a fort, and Zoutpansberg. These towns are laid out very regularly, and are well supplied with water.—The Boers are represented, by those who have sojourned among them, as plain, honest, straightforward, pious, and hospitable, but distrustful of foreigners, especially Englishmen. They live in the most patriarchal way on their plaats or cattle-farms, in comfortable and spacious, though unpretending dwellings. Beside cattle-breeding, their favorite occupation is hunting, in which they show a coolness, self-reliance, and intrepidity equal only to their physical strength. Hotels or inns are unknown among them, and no Boer is known ever to have denied the rights of hospitality to strangers. In Livingstone's recent work on South Africa, we find the same favorable estimate of the Boers, allowances made, however, for those who break loose from British allegiance, and who feel aggrieved for being denied the privilege of using the Hottentots as slaves. The cruelty of these lawless members of the Boer community is pictured by Dr. Livingstone in appalling colors. They are in the habit of pouncing upon a village, and capturing women and children. But the Boers who have not revolted on account of the emancipation of their slaves, are uniformly described by Dr. Livingstone as a worthy and industrious class of people.

BOETHIUS, ANICIUS MANLIUS TORQUATUS SEVERINUS, a Roman statesman, author, and philosopher, born between A. D. 470 and A. D. 475. For more than 2 centuries his family had been illustrious in Rome. His grandfather Flavius was prefect of the prætorians when he was murdered by order of Valentinian III., A. D. 455. His father was consul, A. D. 487, but died while his son was yet a child. Though now an orphan, his mother having died at a still earlier period, the young Boethius was not friendless. Symmachus took him to his home, and educated him as if he were his own son. Boethius commenced his public career soon after finishing his education, and rose rapidly to the highest dignities and offices. He attained the rank of patrician while under the legal age, was consul in A. D. 510, and subsequently *princeps senatus*. In the mean time he had married Rusticana, the daughter of his guardian Symmachus, who bore him 2 sons, Aurelius Anicius Symmachus, and Anicius Manlius Severinus, both of whom were afterward consuls. Notwithstanding the pressure of his public duties, he found leisure to translate several mathematical and philosophical works from the Greek, to indulge his talent for the construction of curious machines, and to scatter charity with a liberal hand among the poor of Rome, whether natives or strangers. His reputation for ability, knowledge, and virtue, at length attract-

ed the attention of Theodoric, king of the Ostrogoths, who appointed him *magister officiorum* at his court. For some years Boëthius enjoyed the friendship of this monarch, and on the occasion of the inauguration of his 2 sons in the consulate, A. D. 522, he pronounced a glowing panegyric on his barbarian patron. His bold advocacy of the cause of the weak had raised him up many enemies at the court of Theodoric, who eagerly watched for an opportunity to effect his ruin. At length Albinus, a noble Roman, having been accused of treason by the dictator Cyprinus, Boëthius not only undertook his defence, but in the course of it spoke with enthusiasm of liberty and patriotism, and the past glory and greatness of Rome. It was not difficult to convince the distrustful Theodoric that the man who was capable of uttering such sentiments was equally capable of conceiving the scheme of freeing and restoring Rome. He was accordingly arrested, with Symmachus, and without being allowed to defend themselves, they were stripped of their property, and sentenced to suffer an ignominious death. Boëthius was taken to Pavia, and imprisoned in the baptistery of its church, where he wrote that celebrated work on which his fame as an author and philosopher chiefly rests. He was executed there, either by being beheaded, or by being first tortured and then beaten to death with clubs. The day, the season, and the year of his execution are alike uncertain. In A. D. 722 a cenotaph was erected in his honor, in the church of St. Pietro Cielo d'Oro, by Luitprandus, king of the Lombards; and in A. D. 990, a still more magnificent one, with an epitaph by Pope Sylvester II., was raised to his memory by the emperor Otho III. As late as A. D. 1594 the baptistery in which Boëthius had been imprisoned, was to be seen at Pavia. He was long regarded by the Catholic church as a saint and a martyr, and in after times many traditions were current about his intimacy with St. Benedict, and the miracles which he had wrought during his life and at his death. The theory has recently been maintained, however, that he was not a Christian at all, and that the theological compilations ascribed to him were written by another person of the same name. The greatest of his works is that which he composed in prison at Pavia while awaiting execution, and entitled *De Consolatione Philosophiæ*. It is an imaginary dialogue, alternately in prose and verse, between the author and philosophy. Its tone, though not strictly Christian, is moral and elevated; its style is eloquent, perspicuous, and pure, and its arguments ingenious. It had great fame in the middle ages, and was translated into all the languages of central and western Europe, and even into Greek, Hebrew, and Arabic. But the most celebrated of these translations was that into Anglo-Saxon by King Alfred, which has a peculiar interest, both as being one of the earliest specimens of English literature, and one of the

chief literary relics of Alfred. The best editions of the works of Boëthius are those published at Basel in folio in 1570, and at Glasgow in 4to. in 1751. The best edition of the *De Consolatione Philosophiæ* is that of J. S. Cardale, which appeared in 1828, with notes and English translation.

BOETHIUS, or BOZON, or BOYON, HECZON, a distinguished Scotch historian, born at Dundee about the year 1465, died 1585. His fame is as much in dispute as his surname, which is written in at least 6 different ways. The "Biographical Dictionary of Eminent Scotsmen," however, gives it Boeca. He was descended of a family who enjoyed the barony of Panbride. He was educated first at Dundee, and then at Paris, and called to the professorship of philosophy in the college of Montaigu, where he formed an acquaintance with Erasmus, which resulted in a mutual esteem, perpetuated through life. From Montaigu, he was called to the first presidency of Aberdeen college, in 1500. He expresses regret at leaving the learned society by which he was surrounded in France, but says that he was influenced by gifts and promises, among which we shall probably be compelled to reckon the apparently remunerative salary of £2 3s. sterling money, which the incumbent of the presidency of Aberdeen enjoyed. But this was in a day when a royal pensionary was munificently provided with £10. Boëthius, in addition to the presidency of Aberdeen, was canon of Aberdeen and rector of Tyrie. Boëthius has written 2 important works. The first is a history or biography of the bishop of Aberdeen, and published in 1522. He commenced, after the death of Bishop Elphinstone, his patron (1514), out of gratitude, to write his life. The work soon enlarged into an entire change of plan, so as to take in all the bishops of the see, and so became a very valuable history of the see itself, as well as of the college. The second work of Boëthius is that on which his fame mainly depends, namely, his "History of Scotland," published 5 years later (1527). It contains, it is true, much that is fabulous, and its author has been seriously charged in later years with a very unscholarly plagiarism in making it up, and by others with too much fertility of imagination, not only in inventing materials, but imagining authorities for them. However this may be, his "History of Scotland" was the first attempt worthy of record to put down at least a little that was historical, with much, perhaps, that was fabulous, of Scotland. As such, the work and the author are deserving of a charitable judgment, when we take into account the times on which the Aberdeen president fell. His imagination is doubtless more fertile than his judgment is mature, but an air of freedom breathes throughout the entire work, which, while it testifies to his Scotch blood, should win all honor from Scotch hearts. The publication of his history drew a testimonial

from the magistrates of Aberdeen, characteristic of the times. They voted "to Maister Hector Boece, a tun of wine, or at his option £20 to buy a new bonnet." Erasmus says of him he was "a man that did not know how to make a lye," and in a contemporary poetic eulogy he is thus embalmed:

Maister Hector of sic his lande and glorie,
In Albion since stories wes begun,
Wes never nane sic amang oure poetis fun,
Maister in art, doctor in theologie;
In all science and profounde clerke is he.

BOETIE, ETIENNE DE LA, a French author, the friend of Montaigne, born at Sarlat, in what is now the department of Dordogne, Nov. 1, 1530, died Aug. 18, 1568. He was celebrated in childhood, his precocious works, which were translations, being widely known in France, and became a prominent counsellor of the parliament of Bordeaux, but is now chiefly remembered because Montaigne published some of his works, and recorded in a few touching pages the friendship which existed between them. His discourse on voluntary servitude, a violent philippic against royalty, was written in his 18th year. He died in the arms of Montaigne, and to him is dedicated Montaigne's famous chapter on "Friendship."

BOETTGER, ADOLF, a living German poet, dramatist, and translator, born at Leipsic, May 21, 1815. Among his various writings, his translations of Byron, and Shakespeare's "As You Like it," "A Midsummer Night's Dream," and "Much Ado about Nothing," are most admired. He has also translated Goldsmith's poems, Pope, printed in 1842, Milton, and Ossian.

BOG, an Irish word, literally meaning soft, applied in Great Britain to extensive districts of marshy land, such as we commonly call in this country swamps. They consist, in Europe, so universally of peat, that this substance is there generally regarded essential to a bog. As we use the word, it is in the sense of quagmire; any soft and wet spot, into which a man would sink in attempting to cross it, being called a bog. The true bog is most commonly found in northern latitudes, and in districts where great humidity prevails. Their situation is not necessarily low, nor their surface level. Some of the great Irish bogs present even a hilly appearance, which, perhaps, is the result of the spread of the mosses in their lateral growth from lower situations over intervening higher grounds. In places naturally moist, by the abundance of springs, or around shallow ponds, the mosses, lichens, heaths, and grasses flourish, which by their spread produce the great peat-bogs, or mosses. They encroach upon the ponds and fill them up with luxuriant living vegetation and the accumulations of decayed matter. The moss called *sphagnum palustre* grows more abundantly than the rest, and like the coral in the ocean, the new growth above leaves the lower portion behind dead and buried, but, nevertheless, laid away for more important pur-

poses in the economy of nature. The increase of such plants, which suck up the moisture of the air and hold it like a sponge, may convert even places naturally dry into bogs. Lands covered with heavy forests have been known, on the trees being killed by some cause, to be thus buried under the sphagnous vegetation, and the prostrated trees, protected by it from decay, have, ages afterward, been dug out perfectly sound in texture, and more solid and heavy than the same wood could have been made by the ordinary methods of seasoning. Such was the case when the famous levels of Hatfield Chase in Yorkshire were drained and converted into arable and pasture lands. This tract of 180,000 acres was stripped of its forests by the Romans, on account of the refuge these afforded to the ancient Britons. In the time of Charles I. it was the largest chase of red deer in England, belonging to this monarch. When cleared up, in the latter portion of the 17th century, vast quantities of excellent timber, of pines, oak, birch, beech, &c., were extracted from beneath the morass. The pines were many of great size, 80 yards long and more, and in such condition, as to be sold for the masts and keels of ships. Oaks, black as ebony, abounded, capable of being used; ash trees were the only trees found decayed. Many of the trees were of extraordinary size, some larger than any now known in Great Britain. Upon them were retained the marks of the axe, and some still held the wooden wedges used to rend them. Broken axe-heads were discovered, links of chains, and coins of Vespasian and other Roman emperors. The great cedar swamps in the southern part of New Jersey also retain in their peaty soil much valuable timber, the relics of forests of unknown age. Dr. Kitchell, the state geologist, reports that an extensive business has long been carried on in extracting this ancient timber and converting it into shingles. The logs are discovered by thrusting an iron rod down through the mud, till one is struck and traced along its length. Some have been found 80 feet long, of diameter 4, 5, and 6 feet, and 1 of 7 feet. They retain their buoyancy, and float with the side uppermost which was in the swamp the under one. Bogs covered with living forests, as these cedar swamps, receive new accumulations of vegetable matters from the continual waste of their foliage and of the smaller shrubs, which grow among the trees. The forests, once swept off by fire or other cause, are seldom restored. The waters, obstructed by the trunks and branches, stagnate; the mosses then take possession of the surface, and unless this is drained, the spongy covering increases in the manner already described. In some instances it has been known to swell upward, till the surface of the bog became higher than the ground around. Bogs in this condition, when overcharged by excessive rains, have been known to burst, and their contents to be discharged with great violence upon the lower lands. Such a phenomenon occurred in

the famous Solway moss, on the western confines of England and Scotland, Dec. 16, 1772. This moss, of about 7 miles in circumference, stretched along an eminence elevated from 50 to 80 feet above the fertile plain between it and the river Esk. The surface, of some consistency, vibrated to the tread, and might be easily pushed through with a pole, which descended in the soft muck from 15 to 20 feet. It was in this treacherous bog that a troop of horse belonging to the Scotch army, being routed at the battle of Solway by the army of Henry VIII., in the year 1542, were engulfed. The tale was traditional, but it was confirmed by the exhumation by modern peat-diggers of a man and horse in complete armor, in the place where the affair was said to have happened. At the time of its bursting, greater rains had prevailed than for 2 centuries previously. In the night of Dec. 15, the shepherds of Eakdale were aroused from their hamlets by the incursion of a strange tide of black mud, which slowly spread around them like a current of lava. The members of 85 families saved their lives with difficulty, while their farms, covering about 400 acres, were buried with the most of their property. The cottages were some of them almost wholly covered, and others were buried in the peat earth to the thatch of the roofs.—Peat bogs are remarkable for their property of preserving animal substances from putrefaction. Several instances are recorded of bodies, that had been long buried in them, being subsequently exhumed and presenting the appearance of persons but just deceased. In June, 1747, the body of a lady of the olden time was taken from a peat bog in Lincolnshire, 6 feet below the surface. The head and feet were nearly bent together, and the skin, nails, and hair were in a high state of preservation. Upon the feet were leathern shoes or sandals, each cut out of a single piece of tanned ox-hide, folding about the foot and heel, and piked with iron. Such are described by Ohaucer, as being worn in his time. In the Irish bogs the remains of animals are frequently met with, that have long been extinct in that country, and of which, as living, no mention is made in history or tradition—as different species of the deer, elk, &c. In most northern countries bogs are met with of vast extent and in great numbers. They cover such large districts, that they possess a geographical importance, while the materials of which they are composed give them no little geological interest, from the light they shed upon the mode of formation of the more ancient carboniferous deposits of the coal measures. The great peat marsh of Montoire in France, near the mouth of the Loire, is said to have a circumference of 50 leagues. This is somewhat larger than the great Dismal swamp of Virginia and North Carolina, and but little inferior to the area covered by the swamps that make up the Okefnokee in Georgia, which is said to be about 180 miles in circumference. But the central portion of Ireland is the great region of bogs.

Upon a map of the island is seen, between Sligo bay and Galway bay, a portion on the western coast, projecting into the ocean from the main body of the island. A strip of this width, extended in an easterly direction across the country, includes about $\frac{1}{4}$ of the area of the island, and in this portion are found about $\frac{1}{5}$ of its bogs, leaving out of the account the small ones not exceeding about 800 acres each. The whole amount of bog surface is 2,831,000 acres, nearly all of which forms one almost connected mass. The great bog of Allen, east of the Shannon, extends 50 miles in length by 2 to 3 in breadth. This is divided by occasional high lands into several bogs. They all consist of peat, averaging about 25 feet in thickness, never less than 12, nor more than 42. The upper 10 feet is composed of a mass of the fibres of the mosses, more or less decomposed, and a light turf of blackish brown color underlies this, in which the fibres of moss may still be perceived. This variety may extend 10 feet deeper. "At a greater depth the fibres of vegetable matter cease to be visible, the color of the turf becomes blacker, and the substance much more compact, its properties as fuel more valuable, and gradually increasing in the degree of blackness and compactness proportionate to its depth; near the bottom of the bog it forms a black mass, which when dry has a strong resemblance to pitch or bituminous coal, having a conchoidal fracture in every direction, with a black, shining lustre, and susceptible of receiving a considerable polish." (Report of surveyors appointed by Parliament, 1810.) As the peat is removed for fuel, more is supplied every year by the growth of the moss. An increase in the thickness of this has been noticed of 2 inches in a single year.—In England the largest lowland bog is Chatmoss, in the county of Lancaster. It is 6 miles long, of 8 miles greatest breadth, and contains 7,000 acres. It is a mass of pure vegetable matter, without any mixture of sand, gravel, or other material, from 10 to 80 feet in depth. The lower portion is black, compact, and heavy, somewhat resembling coal.—Our own great bogs differ from those of northern Europe in presenting the vegetable matter in a more decomposed state, more commonly in the form of muck than of peat. In the great Dismal swamp, the extent of which is about 40 miles N. and S. and 25 miles E. and W., little true peat appears to be found. The soil is perfectly black, consisting wholly of vegetable matter to the depth of about 15 feet. When dug up and exposed at the surface, it rapidly decomposes. The surface is covered with mosses, reeds, ferns, and aquatic trees and shrubs. The white cedar is abundant, as in all our swamps, and they, and the tall cypress also, furnish timber of such value, that the inmost recesses of this tangled morass have been penetrated by canals in search of it. In its central portion, the surface is found to be 12 feet higher than the rest, and the general level of the swamp is above that of

the adjoining country. Throughout the country, along the seaboard to the gulf of Mexico, swamps of this character are of frequent occurrence. Their outer portions are sometimes wooded swamps, while within they present moss-covered heaths, stretching, like the western prairies, further than the eye can see, and dotted occasionally with clumps or little islands of trees. In New England, the north-western states, and Canada, the bogs furnish genuine peat, and some of those bordering the great lakes are of great extent. Over one of these the traveller is carried upon the great western railroad in Canada West, between Chatham and Lake St. Clair. Upon Long Island, near New York city, the bogs present a marked feature along the sandy coast, and their structure is finely exposed in the excavations made for the Brooklyn aqueduct. Here, as elsewhere, they are found to be the repositories of the remains of the mastodon. (See ALLUVIUM.) The rich black mud from the ponds and marshes of this district has been extracted by hundreds and thousands of cart loads, and is piled up as waste in the adjoining fields. The surface of the heaps spread in the adjoining fields, is covered with an effervescence of sulphate of iron, the exhalations from which fill the air around with sulphurous fumes. As this muck is prepared in this region, it is far better adapted for the use of the farmer than the more compact peat, which is so much esteemed by the English agriculturists. The latter is made productive by first exposing it for months to the decomposing action of the sun and rain, by which it is brought to the condition of the natural muck. It is then esteemed so valuable that, according to the statement of an experienced Lancashire farmer, 2 loads of it being made into a compost with 1 load of animal manure, the product is equal to 3 loads of the latter substance. It has been used to similar advantage in Watertown, Mass., with the same proportion of spent ashes in place of the animal manure. It is a great absorbent of ammonia, and is used to best advantage by sprinkling over the compost heaps the ammoniacal liquors of the gas works or urine. Lime is not so proper a substance to mix with it, though a small quantity may well enough be added to the other materials, particularly if any acid substance be present. The method adopted in England of reclaiming bogs is, after thorough draining, to mix the clay from the bottom of the drains with the surface peat, and to repeat this practice every few years. In some cases the surface is burned over to the depth of 1 to 3 feet, and upon the ashes thus formed, the clay or earth from below is spread to make a soil.

BOG EARTH, the soil often called muck, highly charged with decomposed vegetable matters, which accumulates in bogs and low situations. It is composed essentially of silicious matter and vegetable mould or humus. It constitutes an excellent soil for cultivation when mixed with sand, by carting either one

upon the other. In its natural state it is admirably adapted for promoting the rapid growth of many plants, as is evident from the luxuriant natural growth which usually covers it.

BOG ORE, a variety of iron ore, which collects in low places, being washed down in a soluble form in the waters, which flow over rocks or sands containing oxide of iron, and precipitated in a solid form, as the waters evaporate. It is deposited in the bottoms of ponds as well as swamps, and is found in beds now dry, above the level at which it must originally have been collected, or else these are the product of springs which have now disappeared. The roots of trees appear to have an influence in reducing the peroxide of iron in the sands they come in contact with, to the protoxide, by the action of some organic acid. By this action the ore is rendered soluble, and is liable to be precipitated by change to an insoluble salt, induced by the influence of the air or other causes. As the waters run among deposits of vegetable matters, and this change slowly takes place, the oxide of iron replaces the woody fibre, retaining in its more solid material the exact form of the branches of trees, of the small twigs, and even of the leaves, with their delicate reticulations. Beds of bright red peroxide of iron, made up entirely of masses of these forms, which are true ferruginous petrifications, are met with in a great number of localities, and worked as iron ore. The bog ore deposits of Monmouth co., N. J., contain them, among other varieties of the ore. In Piscataquis county, Me., a very remarkable and productive bed of these petrifications has furnished the supplies of ore to the Katahdin iron works. In the ponds of Plymouth co., Mass., bog ores were found so abundantly, that in the early part of this century no less than 10 small blast-furnaces were kept in operation by them. As the supplies became exhausted, more ores of the same class were, for a time, brought from Egg Harbor, N. J., and carted back into the country to keep the works in operation. From the bottoms of the ponds the ore was raised into boats, as oysters are gathered, with long tongs. It was found in lumps of various sizes, some weighing even 500 lbs.; but usually it occurs in small, irregular-shaped pieces, or in the form of shot. When taken from swamps, the workmen were careful to cover the cavities with loose earth, leaves, bushes, &c., calculating upon another growth in 10 or 15 years; but their expectations were sometimes realized in 7 years. Ehrenberg has detected in the ochreous matters that form bog iron ore, immense numbers of organic bodies, which, indeed, make up the substance of the ochre. They consist of slender articulated plates or threads, partly silicious, and partly ferruginous, of what he considered an animalcule; but which are now commonly regarded by naturalists as belonging to the vegetable kingdom, and are referred to the classes called *diatomacea* and *desmidiæ*. Bog ore contains

phosphorus, arsenic, and other impurities, which greatly impair its qualities for producing strong iron. The pig-metal obtained from it is so brittle, that it breaks to pieces by falling upon the hard ground; but the foreign matters which weaken it, also give to the melted cast-iron great fluidity, which causes it to be in demand for the manufacture of fine castings, the metal flowing into the minutest cavities of the mould, and retaining the sharp outlines desired. The iron made from the bog ores of Snowhill, on the eastern shore of Maryland, notwithstanding its great brittleness, brings a high price, for mixing with other qualities of metal, at the great stove founderies of Albany and Troy, for producing the best material for their excellent castings. Bog ores are very easily converted into iron, and when they can be procured to mix with other kinds of ore, they produce a very beneficial effect, both in the running of the furnace, and in the quality of the iron. For these reasons, as also for the cheapness with which they are obtained, it is an object to have them at hand, though they seldom yield more than 80 to 85 per cent. of cast-iron.

BOGARDUS, EVERARDUS, the first minister of New York, came out with Governor Wouter van Twiller, in 1638. He had a house and stable on what is now Broad street. He was of the communion of the Dutch Reformed church, married and remained here until 1647, not always on the best terms with the governors, and was drowned on his passage home, Sept. 27, 1647.

BOGDAN, NEGRUL, son and successor of Stephen the Great, governor of Moldavia, who, at his death in 1522, counselled his son to anticipate by voluntary submission to the Turks, an inevitable conquest. Bogdan did not at first follow this counsel; but having lost within a year the battle of Mohacs, and Hungary having been invaded by a large Turkish force, he sent to Solyman offers of submission. He was received with favor by the sultan, and in return for an annual tribute of 4,000 crowns of gold, beside numerous horses and falcons, Moldavia was allowed to preserve its own religion, an independent administration, and the right to choose its own princes. Bogdan did not long survive this treaty, and his successor refusing to pay the tribute, drew again the arms of the Turks upon the Moldavian principality.

BOGDANOWITCH, HYPPOLIT FEDOROWITCH, a Russian poet, born Dec. 28, 1748, in Little Russia, died near Koorak, Jan. 6, 1808. His father, an inferior civil official, destined him for a surveyor, and from childhood his studies were principally mathematical; but the poetical spirit was strong in him, and having been sent to Moscow in 1754, instead of studying mathematics he besought the manager of the theatre there, at the age of 15, to receive him into the company. Cheraskoff, the manager, enabled him to enter the university, where he studied foreign languages and the poetic art. He found protectors among the influential no-

bility, and was sent as secretary of legation to Dresden. There he had an opportunity to study the masterpieces of art, and enrich his gentle and affectionate imagination. He published songs and other poems, whose principal characteristics are tenderness, naïveté, and love of nature. He edited various periodicals, and was patronized by Catharine II., who advanced him rapidly to offices which did not impede his poetical studies and productions. After the death of his benefactress he retired from the public service, and spent the rest of his days at a country seat in the interior of Russia.

BOGENHAUSEN, a village of upper Bavaria, on the Isar, and 2 miles distant from Munich. The royal observatory of Munich, one of the best in Europe, was erected here in 1817.

BOGHAZ KIEUL, or KEWEE, or KOR (probably identical with the ancient *Tarum*), a village of Asia Minor, 188 miles S. W. of Amasia. It is thought to have been the site of the great temple of Jupiter mentioned by Strabo, and in addition to some remains, supposed to be of this temple, it contains the ruins of a cyclopean wall and 2 fortresses. Various bas-reliefs are also to be seen here.

BOGLIPOOR, or BHAGULPORE, a district of Bengal, between lat. 24° 17' and 26° 20' N., and long. 86° 15' and 88° 3' E.; area, 5,806 sq. m.; pop. stated at 2,000,000, $\frac{1}{4}$ of whom are Mohammedans, and the rest Braminists. The district is traversed by the Ganges and several small streams. It is exceedingly hilly, and so stony that a small portion even of the comparatively level land is unfit for the plough. The hill district is inhabited by mountaineers of savage character, among whom a peculiar kind of judicial authority has been established by the company. Slavery is permitted.—The capital city, of the same name, 268 N. W. of Calcutta, is of modern erection, on the river Ganges; pop. about 80,000, the greater part Mohammedans. There is a small Catholic church under the charge of a priest sent from the propaganda at Rome, and a district school where English is taught, which was attended, in 1852, by 115 pupils. In the neighborhood are 2 round towers of ancient structure, the objects of pilgrimage. The monuments erected in honor of Cleveland, a distinguished judge and magistrate, are in the vicinity of the town.

BOGOMILES. See BASIL, a Bulgarian physician.

BOGOTA, the capital of the republic of New Granada, in South America; formerly that of Colombia, when it was known by the name of Santa Fé de Bogotá. The city was founded in 1588, by Gonzalez Ximenes de Quesada. The site he selected is in lat. 4° 35' 48" N., long. 74° 18' 45" W., at the base of the eastern of the 3 ranges into which the chain of the Andes is here divided. Here one of the great paramos or extensive plains of the Andes spreads out toward the west about 80 miles, and in a north and south direction nearly 60 miles. Its elevation above the ocean, according

to Humboldt, is 8,694 feet; but this elevation disappears under the lofty peaks, which look down upon it on all sides. On the east the precipices at the base of La Guadalupe and Monteserrate rise up from the outskirts of the city, and the summits of those mountains reach an elevation of about 2,500 feet above it. Not far off are summits 5,000 feet higher than the city, and 1 degree further north, beyond this range, called the Cordillera de la Suma Paz, the peaks are covered with perpetual snow. The streams commencing on the eastern slope, but a few miles from Bogota, find their way into the Meta, and thence into the Orinoco; those on the west feed the Magdalena, and flow northward into the Caribbean sea. The mountains west of the plain, between it and the Magdalena river, are too low to hide from the city the distant view of the great central range, the Cordillera de Quindiu, the summits of which rise far above the snow line. Beyond this range is the valley of the Cauca, a large stream which joins the Magdalena near the sea, and beyond this is the mountain range of the Choco, or the Western Cordillera, on the other side of which the streams flow into the Pacific. Bogota thus separated from the Pacific by 250 miles or more of a succession of mountains and of deep valleys, is forced to communicate with the more distant Caribbean coast by the Magdalena river. This is ascended by steamboats to Honda, the passage up the river occupying from 8 to 10 days. Honda is 23 leagues distant from the city. Only 9 leagues of this distance (from Bogota to El Roble) is traversed on wheels, the remainder of the way being but a mule path. The population of Bogota in 1800 was 21,464; in 1821, it was estimated at 30,000; and is now about 50,000. Its prosperity is primarily due to its situation upon a remarkably fertile and healthy plain, elevated far above the reach of the fevers that prevail in the lower valleys. It was occupied by a numerous population before the conquest of the country by the Spaniards. Lying almost under the equator, it yet enjoys in its high position the climate and productions of the warmer temperate latitudes, while those of still colder regions are near at hand higher up the mountains, and those of the tropics by descending to lower levels. The means of support are thus provided for a large population in great profusion and variety. The mines of valuable ores, of precious stones, of salt, and of coal in the vicinity, furnish employment for great numbers; and thus Bogota became, in its isolated position, the important centre of a large agricultural and mining community, and a suitable place for the seat of government of the republic. The advantages of its site for the establishment of institutions of learning were early appreciated, and in 1610 was founded the university of Bogota. Three colleges have since been added, of which the professors are mostly priests and monks, also a school of chemistry, and the natural sciences, and a military school under the

patronage of the government. There are also in the city a public library, an observatory not yet furnished, and a theatre. The religious institutions are still more numerous, and so richly endowed, that they possess more than half the houses in the city. The church edifices are no less than 29 in number, some of them gorgeously adorned in the interior with gold and jewels. The cathedral, built in 1814, is a structure of imposing appearance, as seen in approaching the city by the road from El Roble, and within highly decorated. The statue of the Virgin, the patron saint, was once adorned with 1,858 diamonds, 1,295 emeralds, and many other precious stones. The convents, of which there were formerly 83, are now reduced to 12 in number, the others having fallen to decay or been applied by the government to educational purposes. One of them is still standing upon the summit of Monteserrate, a conspicuous object from the city and the surrounding country, and itself commanding a view rarely surpassed for its grandeur and beauty. The legislative and municipal buildings stand in the square round the cathedral, together with the custom-house and the palace of the president, which last was formerly a Jesuit college. The mint is a large and handsome building, well supplied with machinery for coinage. Its work, however, is less considerable than formerly, when there was a prohibition against the exportation of the precious metals in bars and dust. The city is laid out in squares, with streets crossing at right angles. These are generally narrow, paved, and the principal ones furnished with footpaths, which are not always found in Spanish cities. Streams of water flow through the streets, and if these were provided with sewers, no city could be better supplied with the means of maintaining the highest degree of cleanliness. But little regard is paid to this virtue, however, and the water is more valued for supplying the fountains in the public squares. The houses are built substantially, but seldom of more than 2 stories in height. They are made of sun-dried brick, and covered with tiles. Carriages are not employed in the streets, and the necessary traffic is conducted by the use of mules. The climate of the city is remarkable for its uniform temperate character. The year is about equally divided into 2 dry and 2 winter or rainy seasons. The rainy months are March, April, and May; September, October, and November. The rains are not continuous, often commencing not till toward the latter part of the day. The temperature is then generally from 58° to 68°, but sometimes descends to 50° F. In the dry months, the average temperature in the shade is from 60° to 65°, the sky is unclouded, and no dew collects at night. Notwithstanding, however, the agreeableness and salubrity of such a climate, the inhabitants of Bogota are not long-lived. They come to maturity early, and old age follows sooner than with people of severer climes. The society of Bogota has a high repu-

tation for its agreeable character; the manners of the people are polite and cheerful, and amusements of every description are followed by all classes. The ladies are fond of ornaments, and in addition to the picturesque costume of the morning saya and mantilla, delight in showy and expensive evening dresses, with a profusion of rich jewelry. The moral condition of the inhabitants has called forth a variety of comments from different travellers, some of whom have, doubtless, given a too unfavorable coloring to their sketches. The new constitution, adopted in May, 1853, in many of its features like that of the United States, admits freedom of religious education and of the press. The manufactures of Bogota are of little importance. The native cottons and woollens are coarse fabrics, the finer stuffs being supplied from abroad, in exchange for the mineral productions, the tobacco, bark, and other vegetable products of the country. The extensive plain furnishes abundant crops, sometimes 2 in a year, of wheat, barley, and vegetables, and pasturage to numberless herds of cattle, horses, and flocks of sheep. It is watered by the river Bogota, which receives near the city the stream called the San Francisco, that flows through the town. For 40 miles the course of the Bogota is through a deep ravine in a S. W. direction toward the Rio Magdalena. As it leaves the plain, 17 miles from Bogota, it is first contracted from a width of 144 feet to about 36 feet, and then is suddenly precipitated in a fall variously stated at 574, 650, and 900 feet. This is the famous fall of Tequendama, one of the high, est cataracts in the world. The water in such an immense leap is thrown into spray, which rises in a column, that is sometimes visible near the city. Below the precipice a tropical climate and vegetation take the place of those of the temperate region of the plain, and instead of the cereal plants, the oaks, and the elms, the traveller finds the sugar-canes, bananas, and palm-trees. Another remarkable object, at some distance, is the natural bridge of Pandi. Across the top of a deep cleft in the rocks, some fragments appear to have fallen together in the form of an arch, and spanned the chasm, which is about 80 feet wide, with a bridge of about 15 feet. This was possibly formed by an earthquake at the same time with the chasm itself. The depth of the chasm to the water which flows at its bottom is about 360 feet. In the eastern Cordillera, 75 miles N. E. of the city, at the junction of the ammonite limestone and hornblende rocks, are the famous emerald mines of Muzo, which have proved a most prolific source of this precious stone to the European markets. The mines are owned by the government, and leased to a company of natives and foreigners. The salt mines, also near the city, and owned by the government, supply the whole of the interior of New Grenada. That of Zipaquira or Zichaquira is described as glittering like an immense rock of crystal, and as

having yielded an annual revenue of \$150,000. The total revenue which the government now derives from all the salt mines, and salt springs of the mountains to the N. E. of Bogota, is estimated at \$500,000; and this is increasing with the increase of population. In the vicinity of Velez, to the north of Bogota, are the celebrated copper mines of Moniquira, the products of which find their way to the Magdalena, down which they are shipped to the Caribbean coast. Mines of this ore not worked appear to abound in various localities convenient to the Magdalena, to the commerce of which they will no doubt, in future years, add large contributions. Iron, lead, and coal are also known to exist in the same region with the copper mines; but these have not attracted much interest. Coal is said to occur abundantly, on the south side of the city, and a coal mountain has lately been discovered north of the city. This statement, made in Taylor's "Statistics of Coal," is said to be derived from a resident of Bogota, familiar with the use of this combustible. The fossils accompanying it were figured and described by Professor Forbes, in the journal of the geological society of London, May 1, 1844, and others of similar character, from the same locality, were described at an earlier period by Von Buch. These fossils refer the coal to the cretaceous formation; and consequently, it is not likely to prove of much importance. Coal-beds in the true coal formation are not known to occur in the range of the Andes, or even in South America. Silver mines are worked in the province of Mariquita, west of the Magdalena river, by an English company; and in the same range of hills, further north, in the province of Antioquia, are gold mines found throughout an extensive territory, and worked by many companies, native and foreign. Their annual production is rated at about \$5,000,000.

BOGUE, DAVID, the principal originator of the London missionary society and the religious tract society, born at Halydown, Berwickshire, Scotland, March 1, 1750, died at Brighton, Oct. 25, 1825. He studied and graduated at the university of Edinburgh, and was licensed as a preacher in the church of Scotland. In 1771 he went to London, and kept a school at Chelsea for some years. After a visit to Amsterdam, in 1776, where he declined an offer to become minister of the Scotch church there, he became pastor of an independent congregation at Gosport, Hampshire, where he also kept a semi-collegiate establishment for young men intending to be preachers. In 1791 he commenced an agitation through the pulpit and the press, which led to the formation of the London missionary society, in 1795. He became head of a seminary founded by that body, and wrote the first tract for the religious tract society, which chiefly originated with him. He was also one of the projectors, and first editor of the "Evangelical Magazine," and took an active part in the formation of the British and foreign

Bible society. Beside various pamphlets, he wrote an "Essay on the Divine Authority of the New Testament," which was translated into several languages, and (in conjunction with Dr. James Bennett, his pupil, friend, and biographer) a "History of Dissenters," 4 vols. 8vo, of which a 2d edition appeared in 1833.

BOGUS, a word of American origin. We say bogus currency, bogus lotteries, bogus banks, a bogus transaction, &c., to signify something fraudulent or delusive in these concerns. It is said that some 20 years ago an individual calling himself Borghese circulated in the north-western and south-western states of the union a number both of counterfeit bills on real banks and also of bills on banks that existed only in Borghese's imagination. The western people corrupted the Italian name Borghese into Bogus, and made it a by-name of reproach. From the west it has become current in the popular speech all over the union.

BOGUSLAWSKI, ADALBERT (Polish *Wojciech*), a Polish actor, manager, and dramatic author, born in the grand duchy of Posen about 1760, died in Warsaw in 1829. He went upon the stage in Warsaw in 1778, and from that epoch until 1810, at which time he was finally settled as the manager of the theatre in Warsaw, he wandered with various fortunes from one end of Poland to another; establishing theatres in various cities and towns; at times the victim of private misfortunes; at others bending under political calamities. He translated comedies, dramas, and operas, from the French, English, and Italian, and composed many original pieces, in which he reproduced national songs, legends, manners, and customs, preserving always the purity and vigor of the Polish language. His plays were published at Warsaw in 1820, in 9 vols.

BOGUSLAWSKI, PALM HEINRICH LUDWIG VON, astronomer, born Sept. 7, 1789, at Magdeburg, died at Breslau, June 5, 1851. In 1806 he fought against the invading French army. The comet of 1807 afforded him occasion to make his first astronomical observations. In 1809, as an officer of artillery, he passed his examination in such a distinguished manner that the government continued him at the high artillery school in Berlin, where, in 1811, he participated in the observations and calculations made by Bode upon the great comet of that year. During the campaigns of 1813-15, in which he took part on the recommendation of Bode, he found access to the principal European observatories. He was wounded and made prisoner at the battle of Kulm, but escaped and joined the army in Erfurt. He finished his military career at the battle of Waterloo, where he had the singular fortune to fire the first and the last gun-shot. His eyesight became weakened, and he devoted himself to agriculture; but afterward his eyes recovered, and he returned to his cherished astronomical studies. In 1831 he became conservator, and in 1848, director of the observatory in Bres-

lau, and from 1886 was a professor at the university there. In 1834 he discovered a comet bearing his name.

BOHA-EDDIN, or BOHADDDIN (ABOULMOHASSEN-YUSSUF-IBN-SHEDDAD), an Arabian scholar and historian, born at Mosul in 1145, died in 1235. Having attained proficiency in Moslem law, he became, at the age of 27, a lecturer at Bagdad. In 1186 he made the pilgrimage to Mecca, and returned through the holy land, visiting Jerusalem, Hebron, and other sacred cities. While in Damascus, he was summoned to the Moslem camp by Saladin, who was desirous of availing himself of the services and influence of so able a scholar, and a man of such reputed Moslem piety and zeal. He accordingly brought his learning and talent to the work of glorifying the wars of that ambitious monarch, in a treatise on the "Laws and Discipline of Sacred War." Saladin appointed him *cadi* of Jerusalem and of the army, and a strong attachment from the commencement subsisted between them, which the scholar knew well how to turn to good account. On the death of Saladin he transferred his attachment to the son, Malek-al-Dhaher, whom he was instrumental in establishing in the succession of the throne. In return, the new prince of Aleppo appointed Boha-eddin to the office of *cadi* of the city, which brought him constantly to reside in the royal court. Aleppo now became the resort for men of science and learning. At this period of his life Boha-eddin founded a college, and he continued to give lectures until he was 90 years old. His great work was, however, the "Life of Saladin." It is a work pronounced, on the whole, free from the extravagance which so generally renders oriental productions distasteful to the more practical scholars of the West. It is written, however, from the stand-point of a zealous Moslem, rather than from that of the practised soldier or the politic statesman.

BOHEMIA (anciently *Bogenheim*, home of the Celtic Boli), in S. E. Germany, formerly independent, now belonging to Austria, lies between lat. 48° 38' and 51° 4' N., and long. 12° and 16° 46' E., bounded N. by Saxony, E. by Prussia and Austrian Silesia and Moravia, S. by Austria proper, and W. by Bavaria; area, 20,012 sq. m.; pop. 4,800,818. It is almost perfectly surrounded by 4 mountain chains, namely: the Erzgebirge on the side of Saxony, the Böhmerwaldgebirge (Bohemian forest mountains) on the side of Bavaria, the Moravian mountains on the side of Moravia, and the Riesengebirge and Sudeten on the side of Silesia. The country is, therefore, believed to have been in ancient times a great lake with a few islands, until the waters broke through the sandstone formation of the eastern Erzgebirge (in a length of 20 miles, and over 200 feet deep), and so formed the channel of the Elbe, by which Bohemia is mainly drained. Within these 4 ridges, of which the first, second, and last ascend to over 4,000, the third to over 2,000 feet, is one great hilly basin, with an average elevation in the north of 700, and in the

south of 1,000 feet above the level of the sea, with no extensive plain, and a great variety of geological formations, granite, sienite and gneiss prevailing at the extreme south; granite, greenstone, and other primitive rocks, at the west and north, where they are partially interrupted by basaltic and other plutonic masses; and tertiary and secondary formation, primitive and basaltic rock, at the east; and even a greater variety all over the interior. The mineral products are more varied than in any other country of the same size; some gold and silver and many more or less precious stones are found, and salt and platina alone are entirely absent. The mineral springs of Carlsbad, Eger, Töplitz, Marienbad, and many others are famous. The climate, sheltered from the northern winds and varied by so manifold a surface, is the most genial, and the soil, except in some southern portions, among the most fertile in Germany; the land is well timbered and well watered, the rivers Moldau and Elbe being navigable to a great distance. It is one of the best stocked provinces of Austria as regards cattle, horses, sheep, and poultry. Nearly $\frac{1}{4}$ of the land is under cultivation, the remainder in forest, furnishing a yearly wood-crop of 8,000,000 cords, beside timber for building and other mechanical purposes. Of grain the yearly crop is between 20,000,000 and 40,000,000 bushels, of which rye furnishes a third, a large portion of which is exported. Enormous masses of green vegetables and fruit are exported to the north, on account of their early appearance in market; there is also a large crop of flax, hemp, tobacco, and hops, with much bad wine. Flax is the great staple of the country. It is raised from imported Russian seed; but the domestic manufactures require a considerable importation in addition. Hand-spinning, now almost abandoned, occupied, in 1800, over 800,000 persons; since which machinery has come in. Weaving and bleaching employ over 180,000 persons, producing linen goods, partly of the finest description, to the annual value of nearly \$3,000,000. Lace-making by hand formerly supported over 40,000 persons at the north; but since the invention of machine lace, not $\frac{1}{4}$ as many. Cotton manufactories are increasing; in 1855 there were over 500,000 spindles, producing about 80,000 cwt. of yarn; nearly 60,000 looms were employed on calicoes. These manufactories are in the northern region, next the Erzgebirge, but the woollen factories, of which, in 1851, there were 146, are more numerous in the north-east, near Reichenberg. There are over 50 leather factories, and the gloves of Prague are much in demand. The paper mills of Prague and the north-east are flourishing. The Bohemian glass factories, producing annually about \$2,000,000, are renowned all over the world, and work mostly for export, particularly to America; the imitation gems, the looking-glass, and fine ornamental glass-ware being unsurpassed. Factories of earthen and stone ware, of wooden and willow ware, and of toys and household furniture,

give employment to thousands. * There are numerous iron works in the vicinity of Prague and Pilsen; excellent steel and cutlery come from Carlsbad and Nixdorf; pewter and tin ware from Carlsbad, Eger, Prague, and Rumburg; mathematical instruments from Neudeck; optical glasses from Bürgstein; chemical and refined sugar from numerous establishments. The exports are some \$6,000,000, and exceed the imports by \$1,000,000.—Of the population more than $\frac{1}{4}$ are Slavonic, the rest of German descent; the latter inhabiting in compact masses the northernmost quarter of the country, the mountainous districts, and forming a great part of every city and town population, being more given to industrial pursuits; while the former, called *Cechi*, and belonging to the same tribe as the Moravians, are the more agricultural portion of the population, and of all Slavonic tribes, undoubtedly the most gifted, cultivated, and the richest in literature and art. They are preëminently a musical people, and are fond of song and poetry. With the exception of 87,853 Protestants and 76,459 Jews, all are Catholics. The educational system, though the best in Austria, is much inferior to any other in Germany. There are only 3,500 primary schools, and the university and other high schools have but lately begun to improve. They excel solely in mathematical, medical, and technical branches.—The earliest population was Celtic, of a tribe called Boii, who, before the Christian era, were driven over the Alps by German tribes, of which, in the first centuries of Christianity, a number inhabiting Bohemia and Moravia were united into a confederation called Marcomanni (frontier men). After long struggles with the Romans along the Danube, the Marcomanni broke into the Roman empire in the 5th century, and, under the name of Boioarians, seem to have peopled the present Bavaria. In their wake the Slavonian Cechi peaceably filled the whole of Bohemia and Moravia. The present admixture of German blood in these countries dates from the 6th and 7th centuries, when the Germans invaded and colonized portions of the country. The Christian religion was introduced by Methodius about 890, when the king of Moravia, Swatopluk, also ruled Bohemia. After his death in 894, an invasion of the Magyars destroyed this Moravian kingdom, and the Bohemians voluntarily sought annexation to the German empire, with which they have, since then, remained united, in spite of the endeavors of Boleslaw I. (936-'67), who united the whole of the country under his sceptre, to make himself again independent. About 1050 his descendant Brzetislaw I. annexed Moravia. The native dukes several times assisted the German emperors against rebellious subjects, and in 1158 received the kingly dignity from Frederic I. Wars of succession convulsed the country until Ottokar I. (1197-1230), a truly great monarch, made the royalty hereditary. By conquest he and his son Ottokar II. extended their dominion over a part of Poland, Austria, and Prussia,

where the latter, in 1256, on a crusade against the heathen Borussians, founded the city of Königsberg. After a short struggle against the emperor Rudolf I., the Bohemian monarchs acquired Poland and Hungary by election; but with the assassination of Wenzel II. the native ruling house was extinguished, and succeeded by the house of Luxemburg, until that line, in 1526, was superseded by Austrian dukes. Charles I. (1347-'78), who as the German emperor was without any influence, was a great king for Bohemia, which he augmented by Lusatia and other acquisitions, which were soon lost. Under his reign the country flourished; Prague, then the only German university, numbered 30,000 students, science and art were fostered, and manufactures, particularly those of glass and linen, were founded. From the beginning of the 15th century the ideas of the reformation began to spread by the teachings of Huss and Jerome of Prague, whose death, at Constance, in 1415 and 1416, and the intervention of the emperor Sigismund, caused the outbreak of the Hussite war. Under the victorious sway of the Hussites the throne of Bohemia was filled by election, mostly from the Luxemburg line, once by a native nobleman, George Podiebrad (1458-'71), until the second Austrian duke Ferdinand, in 1547, by treachery, again made the crown hereditary in the house of Austria. In 1618 the Bohemians rebelled and began the 30 years' war. In 1619 they chose the elector palatine Frederic V. as their king; but soon succumbed in the battle at the White Mountain, near Prague, in 1620. The most cruel persecution commenced; thousands were executed, thousands imprisoned and banished, and their estates confiscated. The constitution was abolished, the crown declared hereditary, Protestantism forbidden and exterminated with fire and sword, the Cechian literature, school system, and nationality proscribed, the native state with its civilization annihilated. No less than 86,000 families, of which 1,088 were noble, all Protestant preachers and teachers, and whosoever refused to become Catholic—in short, the flower of the nation—had to emigrate, and found refuge in Saxony, Sweden, Poland, Holland, Brandenburg, and elsewhere. This, and the sufferings of the 80 years' war, devastated the land. German Catholics were introduced as colonists, and every thing German favored and preferred to such an extent, that the Germans of Bohemia, for more than a century, furnished more than half of all the officers in the Austrian provinces. Even up to 1849, the whole of the Austrian artillery consisted of German Bohemians. To make up for this loss of freedom and higher civilization, agricultural and manufacturing industry was carefully fostered by the government, and the general national welfare was inconsiderably, and but for very short periods, interrupted in the 7 years' war, and the Napoleonic wars. The revolution of 1848 inverted diametrically the position of the parties toward the Austrian government: the Germans of Bohemia, enthusiastic for German

unity and popular liberty, in common with the enormous majority of Austrian Germans, opposed their government; the Cechi in Bohemia, together with the Slavonic population of Austria, looked for a great Slavonic empire in Austria, and, in spite of the bombardment of Prague, where a Slavonic congress, under Bakounine's guidance, was assembled June 11, 1848, by the military, have ever since supported the Austrian authorities. For further information, see AUSTRIA.

BOHEMIAN BRETHREN, a Christian society of the 15th century, who rejected the mass, purgatory, transubstantiation, prayers for the dead, and the adoration of images, and contended for the communion in both kinds. The Hussite movement commenced in 1409, and was followed by a general insurrection of the Bohemian heretics, under Zisca, when 300 tables were spread in the open air for a public communion in both kinds. Then came the more moderate Calixtines. According to some historians, the Bohemian brethren were an offshoot from the Calixtines and Catholics, just after the compromise in 1467. But it is certain that they had attracted no particular notice until 1503, when they were accused by the Catholic party, and an edict was issued against them, prohibiting both their public and private meetings. And when, in the incipient movements of Luther, the Bohemian brethren offered to join his party, that reformer protested, probably on the ground of their anabaptism. This they afterward renounced in 1555, and having sent deputies to Luther, who explained to him more fully their doctrines, he consented to receive them as collaborators. They afterward generally joined the Zwinglians, in which body they finally disappear from the page of history, although the modern society of United Brethren, or Moravians, may be regarded as an offshoot from this body.

BOHEMIAN FOREST, or BÖHMERWALD, the dividing chain of mountains between the waters of the Danube and Elbe, between Bavaria and Bohemia, between the Slavonic Cechi and the Germanic Franconians. It runs in a north-westerly direction, from about Linz to Eger, for upward of 144 miles. It begins abruptly on the Danube, and ascends, for the first half of its course, to an average height of 2,300, in its summits to 4,800 feet, mostly steep and rugged, with high plateaus on the Bavarian side, ending in steep slopes on the rivers Regen and Naab, and short mountain chains on the Bohemian side, overlooking the southern terrace of Bohemia. It consists exclusively of primitive granite and gneiss. Up to 3,600 feet the surface is covered with dense forests and swamps, which in part are a *terra incognita* to this day. It has parallel rugged chains, with few passes, and is one of the roughest portions of Germany. The Moldau and the Regen are the chief rivers which rise here. The highest point is the Great Arber, 4,650 feet high. Near Neumark, in Bo-

hemia, the main chain is interrupted by the deep transverse valley of the river Ohav, 14 miles broad, affording a passage for the Bohemian and Bavarian railroad. On the other side of this valley are the majestic High Bow, 3,200 feet, and the Ossa, 3,950 feet high. The northern continuation of the forest is decidedly lower on an average, and less broken, with no main chain, but several parallel ridges as high as 2,700 feet, mingling at the northern extremity on the Bavarian side with the Fichtel mountains; on the Bohemian side, with the Erzgebirge. The whole forest is of a high strategical importance, and proved so in the Hussite and Napoleonic wars. The productions of the mountains are very poor, oats being almost the only grain, and flax and cattle the only market staples. The population is, with hardly an exception, Germanic or Germanized, rough, uncouth, but temperate, sober, industrious, and conservative. Iron, glass, and linen fabrics are produced. Cham is the only city of importance.

BOHEMIAN LANGUAGE AND LITERATURE. The adjective Bohemian is inappropriate when applied to the principal nation of the westerly Slavonians, and is, moreover, also wrongly applied to the gypsies or Tsigans. The true name of the people is *Cechi* (pronounced *Chai-hee*), from *ceti*, to begin, as they believe themselves to be the first of the family. The language is the harshest, strongest, most abounding in consonants, and, at the same time, the most significant, richest, and the first and most developed of the many dialects of the Slavic family, which itself is the northernmost relative of the Sanscrit, the culminating tongue of the Aryan stock. Nearest to the Cechic are the Moravian and the Slovak of N. and W. Hungary, both sub-dialects, and the Sorbo-Wendic of Lusatia, a cognate dialect. The southern and south-western Slavons had obtained letters from Cyrilus, who modified the Greek alphabet, and the Glagolitic characters, wrongly ascribed to St. Jerome, before the Latin mode of writing was adopted by the other branches of the family, in the form of the black letter, and recently in the Italian shape. In this language there are the 6 Italian vowels (both short and long), with an additional *y* (short and long), which is duller and heavier than *ɨ*; 1 diphthong, *ou* (pronounced as in English *our*); the pseudo-diphthongs of all the vowels with a closing *y*, and the diphthong *é* (pronounced *ie* as in the Italian *niego*), written with one letter. *B, d, f, k, l, m, n, p, v*, sound as in English; but *c* is pronounced as if written *ts* in English; *g* before *e, i, y*, like *y* in *yes*; *h* harsher than in *hen*; *r* trembling and rolling, and not slurred over, as in the English *marsh, park*; *s* always as in *sap*; *t* always as in *tin*; *v* like the English *v*; *z* always as in *zeal*. The following letters with the diacritic sign (ˇ) are pronounced—*c* like English *ch* in *chat*; *š* like *sh* in *shall*; *ž* like the French *j*, or the English *s* in *glasier*; *r* like the Polish *rz*, almost like *rs*, as much as possible in one utterance; *d* like the Magyar *gy* (*dy* in one utterance); *t* like the

Magyar *ty*; *n* like the Italian *gn* in *signore*, or Magyar *ny*; there is also a peculiar letter *l*, with a cross-bar as in Polish, having a heavy and dull sound unknown to the English. The letter *x* occurs only in foreign words. The combination *ch* is pronounced as in German, being the most strongly aspirated guttural sound; the trigramma *sch* represents 2 sounds, viz., *s* and *ch*, as in the German word *Gläschen*. The Cechic language has no article, but declinable demonstrative pronouns. It has 8 genders, 8 declensions, 7 cases (nominative, genitive, dative, accusative, vocative, instrumental or sociative, and locative); 8 numbers (a dual only in nouns and pronouns); 2 kinds of adjectives, determinate and indeterminate; organic and periphrastic degrees of comparison, declinable numerals, 6 forms of the verb (with but 1 inflection), 6 moods (indicative, imperative, conjunctive, optative, conditional, and transgressive or participial). The passive voice and the future tenses are made by means of auxiliaries; but the terminations of persons and numbers are not less developed than in Greek and Latin. Great liberty in the sequence of words characterizes the syntax, which is analogous to the Greek and Latin. Metre predominates over the tones in the vocalism of words, so that the Cechic language can vie with the Magyar in rendering Greek and Latin poetic rhythm. Great variety, force, and phonetic symbolism in the derivating affixes, enrich the language with a great number of expressions, and make up for its scantiness of metaphony.—Joa. Dombrowsky, the greatest Slavic linguist, divides the history of the Cechic language and literature into 6 periods, commencing with the following epochs: 1, the immigration of the Cechi, 550 B. C.; 2, their conversion to Christianity, A. D. 845; 3, King John of Luxemburg, 1310; 4, John Huss, who introduced a precise orthography, 1410; 5, the extension of printing, and Ferdinand I., of Hapsburg, 1526; 6, the battle at the White Mountain, and the expulsion of the non-Catholics, 1620. The discovery, in 1817, of a part of the *Rukopis Kralodvorsky* (manuscript of Köniġinhof), by Hanka, in a church steeple, brought to light a collection of 14 lyric and epic poems, written between 1290 and 1810, in a tender and emphatic strain, and superior to most of the contemporary productions of other European nations. There are about 20 poetic and 50 prose works extant belonging to the epoch before Huss, such as Dalimil's chronicle in verse, of 1314; a song of 1346, on the battle of Orecy, where King John fell, and other historic legends; Thom. Stitny's book for his children, 1376; Baron Andreas de Duba's judicial constitution of Bohemia, 1403; a politico-didactic poem, by S. Flaska of Richenburg; some allegoric, dramatic, and elegiac compositions, with translations of foreign works. Charles I. of Bohemia, known as Charles IV., emperor of Germany, founded, in 1347, the Benedictine monastery of Emaus, in the new town of Prague, for monks who had fled hither from

Croatia; and founded the university of Prague in 1848. John Huss revised the translation of the Bible, wrote tracts and hexameter poetry, and gave a great impulse to the activity of the Cechic mind. Notwithstanding the wholesale destruction of the Hussite writings, there yet remain, hidden in archives and libraries, many productions of the Calixtines, Taborites, Horebites, Orphanites, and other Hussite sects, some of them by mechanics, peasants, and women. Many of these works were carried off by the Swedes, and are now in the library of Stockholm. Mere rhyming, however, prevailed over poetic inspiration in most of the effusions of those times; witness a fragment of Prince Hynek, son of King George Podiebrad (1444-1471). But the prose works of the 15th century are models of composition, especially the state papers: concise, clear, and emphatic in style; so much so, that the Cechic language was about to become a general means of civilization for all Slavonians, and was even used in Lithuanian official documents. John Ziska, the leader of the Hussites (1419-1424), composed war-songs, and a system of tactics for his troops. The work of Hagek de Hodetin, and especially that of Wenc. Wloek de Cenow, on Hussite strategy, are more important. The travels of Albr. Kostka de Postupic to France (1464), of Lew de Rosmital through Europe (1465), of the Bohemian brother, Mart. Kabatnik, in Asia Minor and Egypt (1491), of John de Lobkowic to Palestine (1493), &c.; the spirited and elegant political work of Otibor de Cimburg, the classic production of the same sort by Vict. Corn. de Wzechod, the "Art of Governing," and the great Encyclopædia of the canon Paul Zidek, with many works on economy, popular medicine, &c., are monuments of the Cechic intellect in the latter half of the 15th century. After 1490 the kings ceased to reside in Bohemia, and German Catholics began to pour into the country. Nevertheless, Cechic literature attained its golden age between 1526 and 1620, especially under Rudolf II. (also emperor of Germany, 1576-1612), when the sciences and arts were zealously cultivated by all classes of society. Kepler (though a German) presided over the astronomic observatory at Prague, which then had 2 universities, and 16 other literary institutions, including schools for females as well as males. The Cechic tongue was now more developed even than the German, and was used in all transactions; although in point of style the works of this period are inferior to those of earlier times, the political and legal literature is superior to the rest. The following works are worthy of mention: George Streye's psalms; S. Lomnický de Budec's poems; Ch. de Zerotin's memoirs and letters; Wenc. Hagek de Libocan's extensive, though rather romantic, chronicle of Bohemia; Barto's work on the religious troubles of 1524; Sixt. de Ottendorf's work on the diet of 1547; John Blahoslav's history of the Bohemian and Moravian brethren, perhaps wrongly ascribed to him; a universal history, now at Stockholm,

by an anonymous author, but rich, clear, and trustworthy; genealogies and biographies by Wenc. Brzezan; an excellent history by Adio. Weleslawin; the travels and fortunes of Ulr. de Wilkanowa, Wenc. Woat. de Mitrowic, and Christoph. Harant de Polzie, &c. Matthew Benesowsky's glossology, and Abr. de Ginterrod's classic archæology, are also memorable. There are several good works on judicial affairs and on religious subjects, for instance that of Augusta, a bishop of the Bohemian brethren. The translation of the Bible published by this society reached 8 editions. It is in pure and elegant Cechic, and was translated from the original in the castle of Kralic, in Moravia, by a society which Jos. Zerotin had collected and maintained there from 1579 to 1593.—Count Slawata, one of the imperial Catholic party, who was ejected through a window of the castle of Prague, by Count Thurn's associates, in 1618, left a detailed documentary history of his times, in 15 vols. folio. That act of violence opened the 80 years' war, and brought about the sudden fall and decay of Cechic civilization, which then sank to a low degree of debasement. The best men of the country perished by the sword and pestilence; others emigrated (even the nobility in 1628); herds of German, Italian, Netherlandish, Spanish, and Irish adventurers, took their place in all offices, dignities, and emoluments. Ferdinand II. imported Benedictines from Montserrat, in 1624; and the Jesuits, escorted by a furious soldiery, ransacked every house for Bohemian books, burning all those published after 1414, as heretical. This state of things lasted far into the 18th century. While it prevailed, many of the so-called Bohemian heretics and rebels Germanized their very names. The Jesuit Ant. Konias, who died in 1760, boasted of having burnt 60,000 books. The exiles, however, continued to cherish their native literature, and printed several books in Poland, Saxony, Holland, &c. The Hungarian Protestant Slovaks did very much in preserving Bohemian letters. In Bohemia and Moravia there appeared but few works, such as Bezowsky's chronicle, the lays of Wolney, and the hexameter essays of Rosa. John Amos Comenius, the last bishop of the Bohemian brethren, wrote an *Orbis Pictus*, in several languages, and although his Latinity is barbarous, his native style is pure, lively, and forcible. The Swedes were expelled from Bohemia in 1640, and carried many literary treasures home, among others the *Asbukiindarium* or *Alphabetum Slavorum*, in Glagolitic characters, on parchment, now in the great book at Stockholm; also the *Alphabetum Ruthenum* in Cyrillic figures. The empress Maria Theresa decreed, Dec. 6, 1774, the cessation of persecutions against the Protestants, and remodelled the system of education, introducing normal and other schools. Joseph II. ordered that German should be the language in the high schools and in all public affairs. But thanks to the exertions of Count Francis Kinsky, and of the historian Pelzel, the Cechic language was

introduced into the higher military institutions, and the sciences were freed from German trammels. The Cechic culture soon rose from its long lethargy, and writers appeared in all branches of literature, among whom the following must be particularly mentioned: Pelzel, F. F. Prochazka, W. M. Kramerius, A. V. Parizek, an author of good school-books, Fr. Tomsa, a linguist. The father of modern Bohemian poetry was Ant. Puchmayer, a clergyman (1795-1820), who was also well versed in Polish and Russian. He was followed by Adalb. and J. Negedly, Jos. Rantenkranz, Fr. Stepnicka, Seb. Hniewkowsky, who was also a good prose writer, Fr. Jos. Swoboda, and especially Jos. Jungmann, and Chmelensky, a lyric poet. The higher classes, however, continued to be estranged from native letters, until lately; although since 1776 a chair for the Cechic language has existed even in the university of Vienna. Printing had been introduced into Bohemia in 1476, and Jaroslav Wrtatko lately even claimed a share in its invention in favor of Bohemia, on the ground that Gutenberg was originally from that country, and that the press was freely developed in it, without the aid of Germans. The above-mentioned discovery of Hanka, the introduction of the Cechic tongue in the high schools, the efforts of the supreme Burggraf Kolowrat, in the foundation of a national museum (1823), and other favorable circumstances, have more recently produced a sudden rise of Bohemian literature. We must be content with notices of its more prominent writers and productions. P. Schafarik and Palacky first recommended the old metres in verse. Dobrowsky's innovations were opposed by Jos. Negedly and Palkowic, as politically dangerous. A committee on the language was formed in the museum, in 1831. J. L. Langer was a lyric, didactic, and satiric writer. Fr. Roko wrote an epic poem; John Holly, an epic *Svatopluk* and the *Cyrillo-Methodiade*; Joh. Kolar, elegies; Kat. Schneider, songs and popular ballads. Stiepanek, Klipcera, Ch. Mahacek, J. E. Woel, and Turinsky, were dramatic writers. Opera libretti were produced by the last named, by Swoboda, and by Jos. Chmelensky. Prizes were offered for the best dramatic works, and a national theatre was founded by subscription. Even a nun, Marie Antonie, wrote lyric compositions. We must also mention Jos. Jungmann's "History of Bohemian Literature," P. Schafarik's "History of Slavonic Literature," beside translations from Aristophanes, Schiller, Bürger, &c. A new scientific glossology was produced by Dr. J. Swat. Presl, professor and director of the cabinet, and author of many works on natural history. Franc. Palacky is at the head of the historical school, and is a writer on æsthetic and critical subjects. So are Schafarik and Woel, who have also written on archæology. In physical geography we have Schadek and Fap; on physics and technology, Adalb. Sedlacek, a

good mathematician, Smetana, Amerling, &c.; on philosophy, Ant. Marek; not to mention a host of others on the above subjects, as well as writers on popular theology, and on popular amusements. Among Cechic periodicals there are: *Casopis českého Museum* (Periodical of the Bohemian Museum); *Květy* (Flowers), with a scientific and artistic supplement, *Wlastomil* (the country-friend); *Promysly Posel* (the industrial messenger). Bohemian grammars, for Germans, have been published by Negedly, Hanka, J. Dobrowsky, Trnka, Burian, and Konecny. There are dictionaries by Tomsa, Chmela; the German and Bohemian, by Tham, Dombrosky, and Hanka; Bohemian and Latin, by Hanka; an etymological lexicon and grammar by Celakowsky; a great lexicon by Jos. Jungmann; a German-Bohemian and Bohemian-German, by Franta Sumansky; a technologic dictionary by Spatny, &c. All of these works, of which we have not given the date, are of comparatively modern times, and the latest work on Bohemian history and literature is Wenzig's *Blicke auf das böhmische Volk, seine Geschichte und Literatur* (Leips. 1855). Five Cechic political papers were published in Austria in 1858, and the principal German journals of Bohemia are the *Prager Zeitung*, published at Prague, and the *Anzeiger für das Südliche Böhmen* (Advertiser for southern Bohemia), which appears at Budweis.

BOHEMOND, MARC, a crusader, born about 1056, died in 1111, eldest son of Robert Guiscard, or the crafty, who was the son of Tancred de Hauteville, and who won for himself, by his sword, his sole patrimony, the dukedom of Apulia and Calabria, as his younger brother Roger won the kingdom of Sicily from the Saracenic Arabs who held it. Bohemond, the son and nephew of these 2 adventurers, who from simple Norman gentlemen, and that of the poorest, had raised themselves to the rank of independent princes by their unassisted valor, being only the natural son, not the heir, of his father, received for his inheritance the city of Tarentum and his sword. With the latter he determined to eke out the profits of the former, and he was already besieging Amalfi, when he was told that the great crusading army, consisting of almost all the nations of the West, had landed in Apulia. "He informed himself," says Michelet, in his history of France, "minutely of their names, numbers, arms, and resources, and then, without saying a word, he took the cross and left Amalfi. The portrait drawn of him by Anna Comnena, the daughter of Alexis, who saw him at Constantinople, and entertained so great a dread of him, is curious. She watched him with all a woman's interest and curiosity. 'He was taller than the tallest by a cubit, thin-flanked, wide-shouldered and broad-chested, and neither lean nor fat. His arms were powerful, his hands fleshy and rather large. On scanning him closely you perceived that he was somewhat bowed. His skin was very white, and his hair inclined to flaxen, and instead of

floating wildly, as the other barbarians wore it, it did not fall below his ears. I cannot tell the color of his beard, as his cheeks and chin were shaved; I think, however, it was red. His eye, of a blue approaching to sea-green, bespoke his valor and his passionate temperament. His nostrils took in the air freely, at the pleasure of the ardent heart which pulsed in his vast chest. There was an agreeability in his appearance, but the agreeability was destroyed by terror. There was something not likeable, and which even seemed not human, in that stature and look of his. His smile seemed to me alive with threats; he was all artifice and cunning; his speech was precise, and his replies could not be laid hold of, or wrested to his disadvantage." Bohemond made himself master of Antioch, and retained possession of it; nor would he probably have proceeded further, in conjunction with the crusaders, had it not been for the shame of deserting his colors, which compelled him to accompany them to the assault of Jerusalem. After the termination of the crusade, he married one of the daughters of the king of France, his nephew Tancred espousing another, and returned to Apulia, whither he was accompanied by many of the French nobility, who preferred remaining to aid him in the war which he was planning against Alexis. The war, however, in spite of the skill, policy, and valor of the western lances, was, by the ill effects of the climate, and by the poisoning of the wells and rivers, disastrous to the Normans; and, returning to Apulia, Bohemond died, leaving a son of tender age, and bequeathing his Syrian kingdom of Antioch to Tancred.

BOHLEN, PETER VON, a German oriental scholar, born of poor parents, in Oldenburg, March 18, 1796, died Feb. 6, 1840. He lost his parents early, and passed his youth in extreme poverty. In 1814 he went to Hamburg, and lived as a domestic, until his good character and love of science interested some generous persons in his favor, who furnished him the means of pursuing his studies. He subsequently became professor of the oriental languages in the university of Königsberg.

BOHN, HENRY G., a London publisher, of German parentage, born in London, about 1800, who commenced in 1845 the republication of rare standard works, selected from all the national literatures of Europe, in the English language, and in a cheap form. From that time to the present Mr. Bohn has issued and continues to issue, as serials, and in a uniform shape, his "Standard Library," now numbering some 180 volumes, his "Scientific Library," "Illustrated Library," "Library of French Memoirs," "Library of Extra Volumes," "Classical Library," consisting of translations of the Greek and Latin classics, "Antiquarian Library," "Philosophical Library," "Philological Library," "Library of British Classics," "Ecclesiastical Library," "Miniature Library," and "Cheap Series." These libraries number at the present time in the aggregate about 500

volumes, and have attained a very large circulation. Several of the volumes have been edited by the publisher.

BOHOL, one of the Philippine islands, inhabited by the Bisaya nation; crossed by lat. 10° N. and long. 124° E.; area, 1,860 sq. m.; pop. in 1849, 116,751. The soil is inferior in fertility to that of the neighboring islands, Zebu and Leyte; but it produces rice sufficient for the subsistence of its inhabitants; some tobacco, cotton of a good quality, and the abaca banana, from which is obtained the well-known Manila hemp. The small islands, Mino, Polo, Davis, Panglao, and 16 inconsiderable islets, belong to Bohol; and all, with the principal islands, are included in the province of Zebu.

BOIARDO, or BOJARDO, MATTEO MARIA, count of Scandiano, one of the most celebrated Italian poets, born at Scandiano, about 1430 or 1434, died at Reggio, Dec. 20, 1494. He was descended from an ancient family of Ferrara, and after finishing his studies in the university of that place, he resided at the court of the duke of Este, was employed in several honorable missions, and appointed governor of Reggio. In this place and office, after some changes of residence, he died. Although noble in birth and character, brave and faithful in office, he was yet better known by his poetry. His great chivalrous poem, which was left unfinished, *Orlando innamorato*, although read by few, is the most celebrated of his works. It is divided into 8 books, containing 69 cantos. The *Iliad* is its model, and the siege of Paris is another siege of Troy. The *Orlando furioso* of Ariosto is a continuation of the *Orlando innamorato*. In 1544 this work had already passed through 14 editions, and was translated about the same time into French by Vincent Rosset made a new translation of it in 1619, and Le Sage an imitation of it in 1717. The last French translation is that of Tressan (Paris, 1722). Boiardo wrote his poem in the Italian spoken in his time at the court of Ferrara, and it was, therefore, very much criticized at Florence. After various attempts to purify the style, it was more than once entirely rewritten. This brought the poem into disuse, and Panizzi first published the primitive text, with a careful examination of the poem (London, 1830). Boiardo was the author of many other works, the most valuable of which are his *Sonnetti e canzoni*, in 8 volumes, almost all addressed to his mistress, Antonia Caprara. Among the others is a drama in 5 acts, entitled *Il Timone*, which went through several editions. He also made an Italian translation of Herodotus.

BOIELDIEU, FRANÇOIS ADRIEN, a French composer, born at Rouen, Dec. 15, 1775, died near Paris, Oct. 8, 1834. At a comparatively early age he was distinguished as a performer on the piano, for which he composed his first musical pieces. These were succeeded by duets for the harp and piano, and romances, remarkable for their naïve and graceful melodies, sev-

eral of which, as the *Ménestrel* and *S'il est vrai que d'être deux*, became very popular. In 1797, 2 years after his arrival in Paris, he was appointed professor of the piano at the conservatoire, and about the same time made his debut at the opera comique in *La famille Suisse*, which was succeeded by *La calife de Bagdad*, *Ma tante Aurore*, and other works, revealing fertility of invention, and a freshness and vivacity in the melodies which have never been surpassed on the French stage. In 1803, at the invitation of the emperor Alexander I. of Russia, he went to St. Petersburg to fill the place of imperial chapel-master. He remained 8 years, and returned to Paris in 1811, and soon after brought out a number of the works composed during his absence, and some new ones, among which were *Jean de Paris*, *Les deux nuits*, *Le nouveau seigneur du village*, &c. In 1817 he was elected a member of the institute, soon after which appeared his *Chapeiron rouge*, the gay and brilliant music of which fully justified the honor thus conferred upon him. In 1825 he produced *La dame blanche*, esteemed his *chef-d'œuvre*, which, 25 years ago, was familiar to the English and American stage. An affection of the throat now compelled him to resign his professorship, but he was enabled to live comfortably on a pension from the conservatoire and an annual present from Charles X., until the revolution of July, 1830, deprived him of both these sources of income. He died in somewhat impoverished circumstances, but was honored with a superb burial.

BOIGNE, BENOÎT LE BOIGNE, comte de, a Savoyard adventurer, born at Chambéry, in Savoy, March 8, 1741, died there June 21, 1830. He was educated in his native town, and first enlisted in the Irish brigade in the service of the king of France, and then migrated to Greece, where he received the appointment of captain in an independent Greek regiment in the pay of Russia. He now resolved upon trying his fortune in Hindostan, and served there first as fencing-master and then as ensign in a native regiment, till Warren Hastings recommended him to the patronage of the king of Oude, by whom he was liberally treated. He eventually passed into the service of the Rajah Sindiah, whose army he instructed in European tactics, and frequently led to victory over the neighboring potentates. At the death of his master in 1794, he remained faithful to the fortunes of his nephew and successor, refusing tempting offers from the Mogul emperor and the king of Cabool. After the throne of this prince was placed on a secure basis, he went to Calcutta, and sold a regiment of Persian cavalry which he had raised to the British East India company, on very advantageous terms to himself. With the large fortune thus acquired, he returned to Europe, visited England, married the marchioness of Osmond, and bought an estate near his native city. He built and presented to the citizens of that place a theatre, made new

and handsome streets, and erected and endowed a college of Jesuits.

BOIL, a people of Gaul, who passed into Germany, and settled in those parts of it which have been since called after them Bohemia and Bavaria. The name Boii is derived from the Celtic *Bo*, fear, and signifies "the terrible ones."

BOILEAU DESPREAUX, NICOLAS, a French poet, born near Paris, Nov. 1, 1636, died March 18, 1711. He applied himself at first to the study of the law and afterward of theology, but devoting himself eventually to the pursuit of literature, he produced, within the space of 40 years, a vast number of works, the most important of which is that on the art of poetry, establishing an æsthetic code for all forms of poetical composition. His satirical poem *Le Lutrin*, and the *Dialogue des héros de romans*, must also be particularly mentioned. His other writings comprise translations of the classics, miscellaneous effusions on art, music, and poetry, and his famous epistles, of which those treating of *Le respect humain*, *La connoissance de soi-même*, and *Plaisirs de la campagne* are the best. When Boileau began to write, Montaigne, Pascal, Malherbe, Corneille, Molière, La Fontaine, and other eminent authors, had already made their appearance; yet the people were slow to appreciate the genius of the new school, to which they preferred the previous mediocre and imitative writers. Boileau's great achievement was to cure this perversion of taste. Like his friend Racine, he was historiographer of Louis XIV., and the recipient of an annual pension of 2,000 francs. His admission to the French academy did not take place before 1684, owing to his attacks upon some of the members. The latter part of his life was passed in neglect and troubles, which accelerated his death. He left the reputation of a genial, high-minded, and generous man. Among the best editions of his complete works are those of Daunou (1809 and 1825), and of Berriat St. Prix (1830).

BOILING POINT. Different liquids boil at different temperatures, and the same liquid may be made to boil at any temperature, from the freezing point up, according as the pressure upon its surface is taken off or increased. As the term is employed, it is understood to mean the temperature at which water boils, under the ordinary pressure of the atmosphere. This, however, it will be seen, is not a definite point, but varies from several causes. The commissioners appointed by the government of Great Britain to construct standard weights and measures, give the following formula, as defining the boiling point at different latitudes and elevations. The temperature of 212° F. represents "the temperature of steam under Laplace's standard atmospheric pressure, or the atmospheric pressure corresponding to the following number of inches in the barometric reading, reduced to 32° F.: $29.9218 + 0.0766 \times \cosine$ (3 latitude) $+ (0.00000179 \times \text{height in feet above the sea})$." Boiling is the rapid movement up-

ward of the heated particles of any fluid converted into elastic steam, which are replaced by the cooler particles at the surface going down at the same time. The bubbles that rise are steam; they burst at the surface, and a portion escapes, carrying off the excess of heat above 212° F. But if, by reason of boiling in confined space, the pressure upon the surface is increased so that the steam cannot readily pass off, the heat accumulates to a greater degree than 212° , till the steam acquires sufficient elasticity to overcome this increase of pressure. At the bottom of deep mines, the increased pressure of the air has the same effect, and steam is not generated at so low a temperature as at the surface. As the pressure is diminished, either mechanically by the use of the air-pump, or by ascending elevations, steam is generated and passes off more freely, and at a lower temperature. On high mountains, it may be difficult even to produce sufficient heat in open vessels to boil eggs. Darwin was led to notice this, when he ascended with his sailors one of the mountains of Patagonia. They took with them a new pot, in which they attempted in vain to boil their potatoes. With the sailors, the whole difficulty lay in the want of experience of the pot, or in some peculiar defect in it. The boiling point thermometer is an instrument contrived to determine differences of elevation, by the difference of the temperature of boiling water. (See BAROMETER.) If the pressure be entirely taken off, there is then nothing to check the rising of the vapor, and the slightest increase of temperature may throw the fluid into ebullition. But for the pressure of the atmosphere, the ocean would boil and evaporate with heat equivalent to that of the sun's rays. Several ingenious experiments have been devised to illustrate these facts. The simplest is in making a glass of warm water boil under the receiver of an air-pump. Franklin's pulse glass consists of two glass bulbs, connected by a glass tube. The fluid in one is made to boil, till the steam has expelled the air through a small hole, left open for this purpose. The hole is then hermetically closed, and, when the instrument is cold, it contains water and its uncondensed vapor. By holding one of the bulbs in the warm hand, this vapor is expanded, and thrown through the tube into the other bulb, where it bubbles up by boiling; and if this bulb is kept cold, the vapor condenses, and the boiling goes on till the bulb is filled with water forced into it from the warmer globe. By changing ends, the water may all be passed back in the same manner. By causing the vapor that arises to be absorbed by quicklime, water in an exhausted receiver may be thrown into ebullition at any change of temperature from the freezing point. Even by the application of freezing mixtures water may be made to boil. Let a glass flask, $\frac{1}{2}$ filled with water, be heated till this boils, and the air is expelled by the steam; it is then to be tightly stoppered, and allowed to partially cool. It is now filled $\frac{1}{2}$ with water

and $\frac{1}{2}$ with vapor. If it be set in a vessel of cold water, the vapor is condensed, and new vapor forms to supply its place, throwing the liquid into ebullition. This continues till the contents acquire the surrounding temperature. Let it then be removed into a freezing mixture, and the phenomenon will be repeated, from the same causes.—This property of fluids, of being converted into vapor at different temperatures, is made to serve several purposes in the arts. By boiling under pressure, or with increase of heat, fluids possess greater solvent capacities, and water is thus made to extract the gelatine of bones. There is no doubt that the solvent powers of the waters, particularly the saline waters, in the interior of the earth, are greatly increased from this cause; and that they are thus able to act upon the materials they come in contact with, and effect chemical changes in the rocks, which we cannot explain nor imitate. Liquids intended to be evaporated, are sometimes partially freed from the pressure of the air, and are thus "boiled in a vacuum," with economy of fuel. This process is adopted in sugar refining. When the temperature of the usual boiling point would injuriously affect any mixture, as is the case in some medicinal preparations, these are advantageously made by boiling with reduced pressure at a low temperature.—But under some circumstances the boiling point of the same fluid is, very curiously, at different temperatures when the pressure is unchanged. This is the case when little angular pieces of metal are put into the fluid. If this has just ceased boiling by diminution of temperature it will recommence to boil. They also have the effect of causing the process to go on gently, preventing the violent thumping and jumping of the liquid, which is often attended with some inconvenience in boiling strong acid mixtures in chemical analyses. Their action seems to consist in presenting many points, upon which the steam is generated in a great number of minute bubbles separated from each other; and the movement of these, so finely divided, goes on with comparative quietness. Shavings of cedar are said to have the same effect in lowering the temperature at which ether and alcohol boil. It is the absence of any rough points whatever upon the surface of thoroughly cleaned glass vessels, that accounts for the fact that water may be raised in them to the temperature of 220° without boiling. If the inner surface of any vessel be coated with sulphur or lac, so that water cannot adhere to or wet it, the boiling takes place at a higher temperature. A little oil in the fluid has also the same effect. Dorny has shown that air mixed in liquids influences their boiling point more than any thing else except pressure. It forms minute bubbles in the fluid into which the steam dilates, and rises to the surface. He succeeded in thus raising the temperature to 360° without ebullition. When this did take place it was sudden and explosive. The height of a column of water adds to the pressure upon

its lower portion, and raises the temperature at which its particles are converted into vapor. Saline mixtures require a greater degree of heat to boil than pure water, though the vapor that comes off from these is nothing but water. Sea salt, however, is taken up mechanically by the wind from the surface, as was noticed by Pallas in the taste of the dew deposited near the salt lakes of Asiatic Russia. The writer has observed the same effect after an easterly storm, in the taste of the outer surface of grapes grown near the coast of New England. The boiling point of a saturated solution of common salt is 224° ; of alum, 220° ; of sal-ammoniac, 286° ; of acetate of soda, 256° . Pure nitric acid boils at 248° ; pure sulphuric acid at 620° .

BOILS. A boil begins as a pimple in the skin, and continues to increase until it becomes as large as a walnut, or sometimes even larger, or it may not exceed the size of a large pea. It is of a conical shape, somewhat red, or of a dusky hue, and hard, with burning heat and pain. Between the 4th and 8th day it becomes very prominent, and begins to "point;" a speck of matter may be seen on the summit, which gradually softens; the skin at last bursts at that point, and matter mixed with blood is discharged through a small opening. A day or two after this, the core, which is supposed to be a portion of dead connective tissue, finds its way out, or it may be squeezed out, leaving an open cavity which soon fills up, and heals about the 12th or 14th day. Boils may appear on any part of the body, but they commonly form on the face or on the neck, in the arm-pits, or inside of the thighs, on the hips or in the groin, and there are generally several, either at the same time or following one another. They seem to be caused by fatigue in some form; anxiety of mind, fatigue of the digestive organs, and general fatigue of body or of mind, or both. By lancing the pimple on its first appearance the formation of the boil is often prevented.—If allowed to mature and go on to suppuration, the process may be hastened by the application of warm poultices. If a boil be very quiescent, the application of roasted onions will be useful; or, when matter is known to be formed, the lancet may be used. When the boil is allowed to burst of itself, the opening is usually small, and the core remains some time before it is discharged, unless it be drawn out. The cavity soon heals after the core is discharged, and nothing is required but simple dressing. In some cases, however, the sore becomes stationary, and stimulating dressing is required. A little red precipitate ointment, applied on a piece of lint or linen rag, will then be useful. Five grains of red precipitate mixed with a drachm of basilicon, forms a good ointment for this purpose.

BOIS-LE-DUC, a strongly fortified city of Holland, capital of North Brabant, situated near the junction of the Dommel and the Aa; pop. 22,000. The town, which is about 5 miles in

circumference, is handsome and well built, and traversed by several canals, crossed by upward of 80 bridges. It has a handsome town-hall, 7 churches, including a fine Gothic cathedral, an orphan asylum, a grammar school (in which Erasmus was for some time a pupil), a prison, 2 hospitals, an arsenal barracks for 3,000 men, and an academy of painting, sculpture, and architecture. Bois-le-Duc was founded by Godfrey III., duke of Brabant, in 1184. The city was taken by the French under Pichegru in 1794, and by the Prussians under Bülow in 1814.

BOISSERÉE, SULPIS, a German architect and antiquary, born at Cologne in 1788, died May 2, 1854. A journey to Paris in 1808 inspired him with the idea of founding a collection of old German specimens of art. With the assistance of his brother he occupied many years in the work, and finally procured about 200 works of German artists, which went by the name of the "Boisserée collection," and were for several years deposited in a gallery at Stuttgart. They were subsequently purchased by King Louis of Bavaria.

BOISSIEU, JEAN JACQUES DE, a French engraver, born Nov. 29, 1786, at Lyons, died March 1, 1810. He first devoted himself to painting; but his health having suffered by the preparation of colors, he turned to engraving, and especially to etching. He was a friend of Joseph Vernet, and in his own line had no rival. His etchings, which are either original compositions, mostly landscapes from Italy, or copies of Flemish pictures, may be ranked next to those of Rembrandt.

BOISSY D'ANGLAS, FRANÇOIS ANTOINE DE, a conspicuous man during the French revolution, born at St. Jean Chambre, Dec. 8, 1756; died in Paris, Oct. 20, 1836. His family were Protestant, and had destined him to the bar; but having purchased the place of steward to the count of Provence, afterward Louis XVIII., he devoted his leisure to literary pursuits. He was chosen successively a member of the states-general, of the constituent assembly, and of the convention. In the latter body he for the most part sided with the Girondists. He voted for the trial of Louis XVI., for his captivity, and for his deportation, and when extreme measures were determined upon, for an appeal to the people in his behalf, and for the postponement of his execution. These evidences of moderation rendered him suspected to the committee of public safety, and throughout the reign of terror he kept himself in the background; but on the downfall of Robespierre he reappeared at the tribune. He was chosen secretary of the convention, Oct. 7, 1794, and 2 months later a member of the committee of public safety. This committee charged him with the duty of superintending the provisioning of Paris, in which position he was denounced by the populace as having caused the scarcity of bread which prevailed. In the dreadful insurrections of April 1 and May 20, 1795, his situation was exceed-

ingly difficult and dangerous, yet he acted with firmness and judgment. He presided over the deliberations of the convention during the tumultuary scenes in which the head of Féraud was paraded on a pike, and Bonaparte said he was frightened out of his senses by the frantic uproar; but the historians relate that his conduct exhibited the highest degree of intrepidity. After the convention passed away, he was a member of the council of 500, and subsequently president. Being hostile to the directory, however, he was accused, Sept. 5, 1797, of corresponding with a royalist club, and condemned to deportation. For 2 years he was concealed, but at last surrendered himself a prisoner at the island of Oléron. Bonaparte released him, and in 1800 named him to the tribunate, where he was chosen president in 1808. The following year he became a member of the senate, with the title of count. On the restoration of the Bourbons in 1814, he gave in his adhesion to the new government, and was made a peer of France. For the most part he was an advocate of liberal measures, although he managed, like so many other Frenchmen of those times, to stand well with the successive governments. His leisure he gave up to literary occupations, and was the author of *Essai sur la vie, les écrits et les opinions de M. de Malherbes*, in 3 vols., and of *Etudes littéraires et poétiques d'un vieillard*, in 6 vols.

BOISTE, PIERRE CLAUDE VICTOIRE, author of the *Dictionnaire universel de la langue Française*, born in Paris, 1765, died at Ivry, April 24, 1824. Successively an advocate, printer, and man of letters, he collected a wide stock of information, from which he composed his great work, which appeared in 1800, and passed through six editions during the lifetime of the author. He published several other works of less importance, but had not the talent necessary for original composition. The first edition of his *Dictionnaire universel*, which has justly been called the dictionary of dictionaries in the French tongue, did not contain all that it now does. To every edition the author added something—first the etymologies, then the original authorities, finally sentences and maxims, or select thoughts, where each word is employed.

BOIVIN, MARIE ANNE VICTOIRE (GILLAIN), a French midwife, upon whom a diploma of M. D. was conferred by the university of Marburg, noted for her writings on obstetrics, born at Montreuil, April 9, 1778, died May 16, 1841. She was educated in a nunnery, where by her talents she attracted the attention of the sister of Louis XVI., Madame Elisabeth. When the nunnery where she was placed was destroyed in the course of the revolution, she spent 3 years in the study of anatomy and midwifery. In 1797 she married an employé at Versailles, of the name of Boivin, but on being left after a short time a widow with a child and without fortune, she undertook the office of midwife at the hospital of the maternity, and, in 1801, was appointed chief superintend-

ent of the institution, to which, in accordance with her suggestion, a special school of accouchement was added by Chaptal. Her *Mémoires de l'art des accouchements*, published in 1824, passed through several editions. The empress of Russia invited her to St. Petersburg, but she declined.

BOJADOR, a lofty cape of western Africa, in lat. 26° 12' N., and long. 14° 10' W. The coast to the northward is very dangerous, being perpetually shrouded in mists, and strong currents setting in toward the land. For many years this cape interrupted the progress of the early Portuguese navigators, but was finally passed by Gilianes in 1438.

BOKER, GEORGE HENRY, an American dramatist and poet, born in Philadelphia in 1828. He graduated at Princeton college in 1842, studied law, but did not pursue the profession, and, in 1847, published the "Lesson of Life and other Poems." Next he wrote "Calaynos, a Tragedy," which at once extended his reputation in this country, and was successfully played in London. His next production was "Anne Boleyn," which was succeeded by the tragedies of "Leonor de Guzman" and "Francesca da Rimini." He has also written the "Betrothal," a play, the "Widow's Marriage," a comedy, and several minor poems.

BOKHARA, or BUCHARIA, a state of central Asia occupying the south-eastern angle of the Tartarian steppes and great plains, which commence at the Hindoo Koosh and extend to the Northern ocean; pop. estimated from 1,100,000 to 2,500,000. The country lies between lat. 36° and 41° N. and long. 68° and 70° E. in a natural basin, enclosed on the E. by the Bolor Tagh and on the S. by the Hindoo Koosh and Paropamisan chain. On the N. it is bounded by Toorkistan, Khiva, and the Kirgheez steppes, while the Akh Tagh and Kara Tagh (White and Black mountains), spurs of the Bolor Tagh, extend into the country for some distance. The region not occupied by these hills is of clay, covered with moving sand. Owing to the presence of the mountain chains, Bokhara is traversed by several rivers: the Amoo (Oxus or Jihoon), the Zer-af-shan (or Sogd), the Kashka, and the Balkh. By means of these streams and of a laborious system of irrigation, the lands along the rivers are redeemed, and are made to yield an abundant harvest of cereals, pulse, fruits, and the vegetables of a temperate climate. Cotton is carefully cultivated, and silk is obtained in considerable quantities, the worms being reared even by the wandering tribes. Gold, salt, alum, sulphur, and sal-ammoniac are found. Timber is brought down from the mountains. Of the native animals, sheep, goats, and camels are the principal. The sheep are of the fat-tailed breed; a peculiar species with a jet-black curly fleece is found in Bokhara. These black lamb-skins are in great request in the East, especially in Persia. The goats of Bokhara are a variety of the Thibetan and Cashmerian breeds, and yield a beautiful shawl hair. The Bactrian camel, with

2 humps, is much used for carrying burdens. The wild animals are of the smaller species. Situated in the centre of Asia, and exposed to invasions from all sides, the inhabitants are made up of different nations, including Afghans, Arabs, Jews, Calmucks, Karakalpaks, Kirgheez, Leaghians from the Caucasus, Mongols, Persians, Tajiks, Toorkomans, and Oozbeks. The Tajiks are believed to represent the most ancient inhabitants. They are said to resemble the Caucasian type most nearly, and their intellectual activity enables them almost to monopolize the trades and manufactures. The Mohammedan is the prevalent religion. The language is Persian or Turkish, the Turkish being the tongue of the Tartar tribes. Manufactures of cotton, silk, furs, leather, and metals are pursued successfully. Considerable trade, employing not fewer than 8,000 camels, is carried on between Bokhara and Russia. The caravan route passes through the territories of the khan of Khiva to Astrakhan and Orenburg. They export rhubarb, raw cotton, peltries, dressed and raw, fruits, and shawl goods; importing metals, mirrors, iron and steel goods, cloths, and various other articles. This trade is liable to be interrupted by the depredations of the khan of Khiva and of the Kirgheez. But the Russians, who are chiefly interested in it, have lately made their power respected in these regions, and the terror of their name is felt in central Asia as far as the foot of the Hindoo Koosh. The trade between western Asia and the highlands beyond Kashgar also passes through Bokhara, and employs 700 or 800 camels. A trade is likewise carried on, through the mountain passes, with Cabool and the Punjab, but the predatory habits of the mountaineers make it very uncertain.—The country was little, if at all, known to the ancients, and was included under the general name of Transoxiana or Sogdiana. The conquests of the Mohammedans extended to the foot of the Bolor Tagh, and to them Bokhara was known as the Mawar-al-Nahr, and became famous for the floods of light and knowledge which radiated from its great seminaries of learning at Samarcand, Balkh, and Bokhara. Even in modern times these cities enjoy considerable reputation for the number of schools which they maintain. The education is very different from that imparted by the founders of Arabic literature. It consists of readings from the Koran and some instruction in the commentators on the sacred volume, and in metaphysical subtleties. Writing is an accomplishment. The government is a pure despotism, subject, in conformity with Mohammedan usage, to some controlling power in the priesthood. The khan of Bokhara may be styled the only independent sovereign of central Asia; he can bring into the field a considerable number of fighting men. The present khan is unfavorably known from his treatment of Col. Stoddard and Capt. Conolly, who were imprudently sent to him by the British during the troubles in Afghanistan, and whom he detained and murder-

ed. Wolff describes him as nothing better than the lowest of his savage subjects.—The capital, also named BOKHARA, is in lat. 39° 48' N., long. 64° 26' E; pop. estimated at 70,000. It is the residence of the khan, and contains his palace, upward of 800 mosques and medressehs, 14 caravansaries for the accommodation of travellers, and several bazaars of great extent.

BOKHARA, LITTLE, a subdivision of central Asia, in the S. W. corner of the Chinese empire, at the angle formed by the Bolor Tagh and the Thian-Shan mountains. It is also known as Khokan and Kashgar.

BOL, FERDINAND, a painter of Holland, born at Dort, 1610, died in Amsterdam in 1681. He was the pupil of Rembrandt, and is best known by his admirable portraits, in the style of that master, though he likewise executed several historical paintings of merit. Many of his works are still to be seen at Amsterdam. He also practised etching with success.

BOLAN PASS, a defile in the mountains of Beloochistan, on the route between the lower Indus and the table-land of Afghanistan. It consists of a succession of ravines, the aggregate length of which is about 55 miles. Along the course of the Bolan river, which rises in the mountains at an elevation of 4,494 feet above the sea, and flows through the ravines with a rapid descent, a wagon-road passes through this defile with an ascent of 90 feet per mile. The British expedition to Afghanistan, in 1839, spent 6 days, from March 16 to 21, in passing through this defile.

BOLBEC, a town of France, in the department of the Lower Seine, on the Bolbec river and the Paris and Havre railway, 18 miles E. N. E. of the city of Havre; pop. in 1856, 8,664. Cotton cloths are largely manufactured; beside which it has woollen and linen factories, dye-works, and tanneries. Bolbec is well laid out, and contains many handsome residences.

BOLDRE, a parish of England, in the New Forest. It is memorable for having been the scene of the labors of the Rev. William Gilpin, author of "Forest Scenery," and rector of this parish. The profits derived from his talents as an artist and a writer he devoted to the endowment of 2 schools in this place.

BOLE (Gr. βολος, a mass), an argillaceous earthy mineral of various colors, as yellow, black, brown, and bright red, all derived from oxide of iron. The substance is probably disintegrated basalt. It is an earthy substance, absorbs water rapidly, and falls to powder. It was formerly employed as a medicine for its absorbent, astringent, and tonic properties; the last due, no doubt, only to the iron in its composition. It is still used in India in medicine, and in Europe for giving a color to anochovies, and also to tooth-powders. It is also a medicine in veterinary practice. Analysis shows it to be a hydrous silicate of alumina, with varying proportions of oxide of iron, and very small quantities of lime and magnesia; a composition rendering it better adapted to the mechan-

ical purposes to which it is applied than to medicinal uses, or even to satisfying the pangs of hunger, as is practised by some of the native Indians of South America. The Japanese, however, eat it for another purpose, which it may answer very well; this is to induce a thin and spare habit of the body. Armenian bole is much used as a tooth-powder. In Germany bole is calcined, washed, and ground for a paint. The paint known as sienna, or burnt sienna, is a preparation of a chestnut-brown variety from Sienna in Italy. It is fashioned into pipes by the North American Indians, Turks, and Germans.

BOLERO, a popular Spanish dance, supposed to be of Moorish origin, like the fandango. It is accompanied with songs, guitar, and castanets, and, in the neighborhood of Cadiz, with full orchestra. The dancers represent by their pantomime the most conflicting emotions of the human heart, from the first blushing dawn of love to the most vehement bursts of passion.

BOLEYN, ANNE. See **ANNE BOLEYN**.

BOLGRAD, a Russian town situated on the river Yalpookh, in the Lower Budjak, colonial district of Bessarabia, celebrated for the frequent mention made of it in the discussions relative to the territorial difficulties of Russia with Turkey, in the treaty of Paris of 1856. In 1851 the population of the town was estimated at 8,805, chiefly Bulgarians or of Bulgarian origin, and the number of houses, almost all of stone, 1,087. The distance from Odessa is 162 miles, and from Ismail, 80 miles.

BOLI, a town of Anatolia, in Asiatic Turkey, in lat. 40° 35' N., long. 81° 19' E. It is the capital of a district, and contains about 1,000 houses. The ruins of ancient Hadrianopolis are in the vicinity.

BOLINGBROKE, HENRY ST. JOHN, viscount, a famous English statesman, wit, and man of letters, born at Battersea, London, Oct. 1, 1678, died Dec. 12, 1751. He was of an ancient and noble family; his father having been Sir Henry St. John, bart., and afterward viscount, and his mother, the daughter of Robert Rich, earl of Warwick. His early education was managed by his mother, on strict puritanical principles, against the rigidity of which he appears soon to have rebelled. After attending school at Eton, he proceeded to Christ Church college at Oxford, where he soon distinguished himself by the brilliancy of his parts, rather than by his diligence and application. On leaving the university, he is supposed to have spent some years in travel upon the continent, although he has left no record of this period. Returning to England, he was married, in 1700, to Frances, the daughter of Sir Henry Winchcomb; but in spite of the beauty of her person, her accomplishments, and the possession of a large fortune, he did not continue on good terms with her, and they were speedily separated. St. John's grace of manners, his varied attainments, and the fascinating arts of his conversation, rendered him a favorite and a leader

in the fashionable circles of London, where his moral principles, however, were not stringent enough to enable him to resist the seductions of such society. Before he was 25 years of age, he was a somewhat notorious libertine, and wasted, in the indulgence of his passions, the time which he ought to have devoted to the culture of his quick and dazzling abilities. His marriage, which had been promoted by his friends in the hope of weaning him from more miscellaneous connections, had proved no check to the undisciplined impulses of his nature. In a similar hope of interesting him in noble and honorable pursuits, his father retired from the position of representative in parliament for the borough of Wotton Bassett, which was transferred to him, and thus brought him into conspicuous public life. The Tories, under the lead of Rochester and Godolphin, were then in power, and St. John at once attached himself to them. In 1704 he entered the ministry as secretary at war, and for 4 years he discharged the duties of that office. When Godolphin became a Whig, and he and Marlborough formed a new ministry, St. John retired to the country, and devoted himself to study. Two years later, the Tories triumphed, and he was made secretary of state, in the department of foreign affairs. He continued in the administration until the death of Queen Anne, in 1714, having taken an active part in the negotiation of the peace of Utrecht, on which he prided himself, although that measure was regarded as an inglorious one for his country, and had been strenuously opposed throughout, not only by the Whigs, the natural opposition, but by those eminent generals, Marlborough and Eugene, and by Holland and other European powers. Soon after the conclusion of the peace, a violent dissension broke out between St. John and his old friend Harley, then lord high treasurer and earl of Oxford, which Dean Swift, the friend of both, sought in vain to allay, but which did not terminate till the queen had dismissed Oxford, and made St. John her prime minister. His elevation took place July 27, 1714, while, unfortunately for him, the queen died in August of the same year,—a little less than a week afterward. The advent of George I. was the success of the Whigs, and as St. John was more than suspected of having plotted for the return of the Stuart family to the throne, he could no longer hope for favor. Having been called to the house of lords, in 1712, with the title of Viscount Bolingbroke, he made his appearance there, after his dismissal from office, for a short while; but the menacing attitude assumed by the friends of the Hanover family in the house of commons in 1715, caused him alarm, and he fled in disguise to France. This occurred March 27 of that year, and Aug. 6 following he was impeached by Walpole at the bar of the house of lords, for high treason and other crimes and misdemeanors, and not appearing, within the time specified, to reply to

the charges, was formally attainted. Meanwhile, he engaged in the service of James III., the pretender, as he was called, who made him his prime minister, and used him in soliciting the assistance of the French court in the attempt about to be made to revive the prostrate fortunes of the Stuarts. Bolingbroke continued in the active management of his affairs in France after the prince set out upon his expedition to effect a rising in Scotland. The miscarriage of that scheme, and the dissatisfaction of James with his principal secretary, caused his sudden discharge from his employment; when, with a versatility of principle quite on a level with the plausibility of his manner, he sought a reconciliation with the Hanoverian party. Walpole, however, apprehensive of his influence in the event of his return to England, procured the prolongation of his exile. For 7 years he remained in banishment, on the continent, residing principally at La Source, an estate he owned near Orleans, and devoting himself to belles-lettres, and an active correspondence with Pope, Swift, and other celebrated literary contemporaries. His wife dying in 1718, he was privately married 2 years later to the widow of the marquis de Villette, a niece of the notorious Madame de Maintenon. It was chiefly through her instrumentality, in bribing the duchess of Kendal, a mistress of King George, with the sum of £11,000, that he succeeded in getting permission to return to his own country in the year 1728. But he did not resume a permanent residence there till 1724, when, by the judicious use of a large fortune, acquired by tampering in Law's Mississippi bubble, he effected the restoration of his property. The act was signed by the king May 31, 1725. His restoration to civil rights was not granted at the same time, and he found himself excluded from his seat in the house of lords. This denial set his pen in motion against the ministry, so that for some years his political papers in the "Craftsman," under the titles of "An Occasional Writer," and "Humphrey Oldcastle," kept the town alive. His "Letters upon English History," and his "Dissertation upon Parties," subsequently collected and published as separate works, formed parts of this series. At the same time he continued to write, though not to publish, on metaphysical and moral subjects. Convinced, however, of the futility of his attack upon the government, and not a little frightened, perhaps, by a surreptitious issue of his former letters to the secretary of the pretender, he quitted England once more for France, in 1735. He remained abroad till the death of his father in 1742, when he returned to take possession of the family estate at Battersea. The fall of Walpole that same year brought him hopes of recovering his citizenship, but it did not have that effect, nor did he ever again enter into political life. He passed his leisure in the preparation of his literary works, and in intercourse with his philosophic and literary friends,

among whom were numbered many of the most eminent men then living. On his death, in 1751, he bequeathed his manuscripts and works to David Mallet, who published a complete edition of them, in 5 vols. 4to, in 1754. A new edition, with a life by Goldsmith, appeared in 1809, in 8 vols. 8vo. Among the most noteworthy of his writings, beside those already noticed, are "The Idea of a Patriot King," a "Letter on the Spirit of Patriotism," "Some Reflections on the Present State of the Nation," "Letters on the Study and the Use of History," and "Concerning Authority in Matters of Religion." They are written in a fluent, flexible, and eloquent style, combining a certain scholastic refinement with the easy and natural manner of a man of the world, and mingling an apparently profound philosophy with a sprightly and careless wit. Nothing can be more attractive, especially to a young and immature mind, than these are when they are first read, but a closer familiarity with them soon convinces the reader that the rhetoric is artificial, the sentiments affected, the learning a great deal of it borrowed, and the thought intrinsically unimportant. With a marvellous capacity for appropriating the knowledge of others, so far as it suited his purposes, he possessed also a certain French elegance and clearness in setting it forth, which gave not only a momentary charm, but a semblance of profundity, to his speculations. Yet, in spite of their more serious defects, the writings of Bolingbroke for a long time influenced the tone of thought, as well as the manner of writing, of his age; and though they are not destined to be much read hereafter, they will ever occupy a distinguished place in the literary history of that epoch. As an orator, Bolingbroke held a high rank, although his reputation rests chiefly on tradition, and no complete specimen of his eloquence is now extant.

BOLIVAR, a western county of Mississippi, with an area of about 800 sq. m. It is separated by the Mississippi river from Arkansas on the west, and consists mainly of swamp land, part of which is subject to frequent inundations. The climate of the lowlands is considered unhealthy, and extensive and highly fertile tracts are consequently left uncultivated. In 1850 the county produced 4,728 bales of cotton, 107,075 bushels of corn, and 29,066 of sweet potatoes. Capital, Bolivia. Pop. in 1850, 2,577, of whom 2,180 were slaves.

BOLIVAR Y PONTE, SIMON, the "liberator" of Colombia, born at Caracas, July 24, 1793, died at San Pedro, near Santa Martha, Dec. 17, 1830. He was the son of one of the *familias Mantuanas*, which, at the time of the Spanish supremacy, constituted the creole nobility in Venezuela. In compliance with the custom of wealthy Americans of those times, at the early age of 14 he was sent to Europe. From Spain he passed to France, and resided for some years in Paris. In 1802 he married in Madrid, and returned to Venezuela, where his wife died suddenly of yellow fever. After this he

visited Europe a second time, and was present at Napoleon's coronation as emperor, in 1804, and at his assumption of the iron crown of Lombardy, in 1805. In 1809 he returned home, and despite the importunities of Joseph Felix Ribas, his cousin, he declined to join in the revolution which broke out at Caracas, April 19, 1810; but, after the event, he accepted a mission to London to purchase arms and solicit the protection of the British government. Apparently well received by the marquis of Wellesley, then secretary for foreign affairs, he obtained nothing beyond the liberty to export arms for ready cash with the payment of heavy duties upon them. On his return from London, he again withdrew to private life, until, Sept. 1811, he was prevailed upon by Gen. Miranda, then commander-in-chief of the insurgent land and sea forces, to accept the rank of lieutenant-colonel in the staff, and the command of Puerto Cabello, the strongest fortress of Venezuela. The Spanish prisoners of war, whom Miranda used regularly to send to Puerto Cabello, to be confined in the citadel, having succeeded in overcoming their guards by surprise, and in seizing the citadel, Bolivar, although they were unarmed, while he had a numerous garrison and large magazines, embarked precipitately in the night, with 8 of his officers, without giving notice to his own troops, arrived at daybreak at La Guayra, and retired to his estate at San Mateo. On becoming aware of their commander's flight, the garrison retired in good order from the place, which was immediately occupied by the Spaniards under Monteverde. This event turned the scale in favor of Spain, and obliged Miranda, on the authority of the congress, to sign the treaty of Vittoria, July 26, 1812, which restored Venezuela to the Spanish rule. On July 30 Miranda arrived at La Guayra, where he intended to embark on board an English vessel. On his visit to the commander of the place, Col. Manuel Maria Casas, he met with a numerous company, among whom were Don Miguel Peña and Simon Bolivar, who persuaded him to stay, for one night at least, in Casas's house. At 2 o'clock in the morning, when Miranda was soundly sleeping, Casas, Peña, and Bolivar entered his room, with 4 armed soldiers, cautiously seized his sword and pistol, then awakened him, abruptly told him to rise and dress himself, put him into irons, and had him finally surrendered to Monteverde, who dispatched him to Cadiz, where, after some years' captivity, he died in irons. This act, committed on the pretext that Miranda had betrayed his country by the capitulation of Vittoria, procured for Bolivar Monteverde's peculiar favor, so that when he demanded his passport, Monteverde declared "Col. Bolivar's request should be complied with, as a reward for his having served the king of Spain by delivering up Miranda." He was thus allowed to sail for Curaçoa, where he spent 6 weeks, and proceeded, in company with his cousin Ribas, to the little republic of Carthage. Previous to their arrival, a great number of soldiers,

who had served under Gen. Miranda, had fled to Carthage. Ribas proposed to them to undertake an expedition against the Spaniards in Venezuela, and to accept Bolivar as their commander-in-chief. The former proposition they embraced eagerly; to the latter they demurred, but at last yielded, on the condition of Ribas being the second in command. Manuel Rodriguez Torricas, the president of the republic of Carthage, added to the 800 soldiers thus enlisted under Bolivar, 500 men under the command of his cousin, Manuel Castillo. The expedition started in the beginning of Jan. 1813. Dissensions as to the supreme command breaking out between Bolivar and Castillo, the latter suddenly decamped with his grenadiers. Bolivar, on his part, proposed to follow Castillo's example, and return to Carthage, but Ribas persuaded him at length to pursue his course at least as far as Bogota, at that time the seat of the congress of New Granada. They were well received, supported in every way, and were both made generals by the congress, and, after having divided their little army into 2 columns, they marched by different routes upon Caracas. The further they advanced, the stronger grew their resources; the cruel excesses of the Spaniards acting everywhere as the recruiting sergeants for the army of the independents. The power of resistance on the part of the Spaniards was broken, partly by the circumstance of $\frac{1}{4}$ of their army being composed of natives, who bolted on every encounter to the opposite ranks, partly by the cowardice of such generals as Tiscar, Cagigal, and Fierro, who, on every occasion, deserted their own troops. Thus it happened that San Iago Marifio, an ignorant youth, had contrived to dislodge the Spaniards from the provinces of Cumana and Barcelona, at the very time that Bolivar was advancing through the western provinces. The only serious resistance, on the part of the Spaniards, was directed against the column of Ribas, who, however, routed Gen. Monteverde at Lostaguanes, and forced him to shut himself up in Puerto Cabello with the remainder of his troops. On hearing of Bolivar's approach, Gen. Fierro, the governor of Caracas, sent deputies to propose a capitulation, which was concluded at Vittoria; but Fierro, struck by a sudden panic, and not expecting the return of his own emissaries, secretly decamped in the night, leaving more than 1,500 Spaniards at the discretion of the enemy. Bolivar was now honored with a public triumph. Standing in a triumphal car, drawn by 12 young ladies, dressed in white, adorned with the national colors, and all selected from the first families of Caracas, Bolivar, bareheaded, in full uniform, and wielding a small baton in his hand, was, in about half an hour, dragged from the entrance of the city to his residence. Having proclaimed himself "dictator and liberator of the western provinces of Venezuela"—Marifio had assumed the title of "dictator of the eastern provinces"—he created "the order of the liberator," estab-

lished a choice corps of troops under the name of his body-guard, and surrounded himself with the show of a court. But, like most of his countrymen, he was averse to any prolonged exertion, and his dictatorship soon proved a military anarchy, leaving the most important affairs in the hands of favorites, who squandered the finances of the country, and then resorted to odious means in order to restore them. The new enthusiasm of the people was thus turned to dissatisfaction, and the scattered forces of the enemy were allowed to recover. While, in the beginning of Aug. 1818, Monteverde was shut up in the fortress of Puerto Cabello, and the Spanish army reduced to the possession of a small strip of land in the north-western part of Venezuela, 8 months later, in December, the liberator's prestige was gone, and Caracas itself threatened, by the sudden appearance in its neighborhood of the victorious Spaniards under Boves. To strengthen his tottering power, Bolivar assembled, Jan. 1, 1814, a junta of the most influential inhabitants of Caracas, declaring himself to be unwilling any longer to bear the burden of dictatorship. Hurtado Mendoza, on the other hand, argued, in a long oration, "the necessity of leaving the supreme power in the hands of Gen. Bolivar, until the congress of New Granada could meet, and Venezuela be united under one government." This proposal was accepted, and the dictatorship was thus invested with some sort of legal sanction. The war with the Spaniards was, for some time, carried on in a series of small actions, with no decisive advantage to either of the contending parties. In June, 1814, Boves marched with his united forces from Calabozo on La Puerta, where the two dictators, Bolivar and Marifo, had formed a junction, met them, and ordered an immediate attack. After some resistance, Bolivar fled toward Caracas, while Marifo disappeared in the direction of Cumana. Puerto Cabello and Valencia fell into the hands of Boves, who then detached 2 columns (1 of them under the command of Col. Gonzales), by different roads, upon Caracas. Ribas tried in vain to oppose the advance of Gonzales. On the surrender of Caracas to Gonzales, July 17, 1814, Bolivar evacuated La Guayra, ordered the vessels lying in the harbor of that town to sail for Cumana, and retreated with the remainder of his troops upon Barcelona. After a defeat inflicted on the insurgents by Boves, Aug. 8, 1814, at Angaita, Bolivar left his troops the same night secretly to hasten, through by-roads, to Cumana, where, despite the angry protests of Ribas, he at once embarked on board the *Bi-anchi*, together with Marifo and some other officers. If Ribas, Paez, and other generals had followed the dictators in their flight, every thing would have been lost. Treated by Gen. Arismendi, on their arrival at Juan Griego, in the island of Margarita, as deserters, and ordered to depart, they sailed for Carupano, whence, meeting with a similar reception on the part of Col. Bermudez, they steered toward Cartha-

gena. There, to palliate their flight, they published a justificatory memoir, in high-sounding phraseology. Having joined a plot for the overthrow of the government of Carthagena, Bolivar had to leave that little republic, and proceeded to Tunja, where the congress of the federalist republic of New Granada was sitting. At that time the province of Cundinamarca stood at the head of the independent provinces which refused to adopt the Granadian federal compact, while Quito, Pasto, Santa Martha, and other provinces, still remained in the power of the Spaniards. Bolivar, who arrived at Tunja Nov. 23, 1814, was created by the congress commander-in-chief of the federalist forces, and received the double mission of forcing the president of the province of Cundinamarca to acknowledge the authority of the congress, and of then marching against Santa Martha, the only fortified seaport the Spaniards still retained in New Granada. The first point was easily carried, Bogota, the capital of the disaffected province, being a defenceless town. In spite of its capitulation, Bolivar allowed it to be sacked during 48 hours by his troops. At Santa Martha, the Spanish general Montalvo, having a feeble garrison of less than 200 men, and a fortress in a miserable state of defence, had already bespoken a French vessel, in order to secure his own flight, while the inhabitants of the town sent word to Bolivar that on his appearance they would open the gates and drive out the garrison. But instead of marching, as he was ordered by the congress, against the Spaniards at Santa Martha, he indulged his rancor against Castillo, the commander of Carthagena, took upon himself to lead his troops against the latter town, which constituted an integral part of the federal republic. Beaten back, he encamped upon La Papa, a large hill, about gun-shot distance from Carthagena, and established a single small cannon as a battery against a place provided with about 80 guns. He afterward converted the siege into a blockade, which lasted till the beginning of May without any other result than that of reducing his army, by desertion and malady, from 2,400 men to about 700. Meanwhile a great Spanish expedition from Cadiz had arrived, March 25, 1815, under Gen. Morillo, at the island of Margarita, and had been able to throw powerful reinforcements into Santa Martha, and soon after to take Carthagena itself. Previously, however, Bolivar had embarked for Jamaica, May 10, 1815, with about a dozen of his officers, on an armed English brig. Having arrived at the place of refuge, he again published a proclamation, representing himself as the victim of some secret enemy or faction, and defending his flight before the approaching Spaniards as a resignation of command out of deference for the public peace. During his 8 months' stay at Kingston, the generals he had left in Venezuela, and Gen. Arismendi in the island of Margarita, stanchly held their ground against the Spanish arms. But Ribas, from

whom Bolivar had derived his reputation, having been shot by the Spaniards after the capture of Maturin, there appeared in his stead another man on the stage, of still greater abilities, who, being as a foreigner unable to play an independent part in the South American revolution, finally resolved to act under Bolivar. This was Louis Brion. To bring aid to the revolutionists, he had sailed from London for Carthagena with a corvette of 24 guns, equipped in great part at his own expense, with 14,000 stand of arms and a great quantity of military stores. Arriving too late to be useful in that quarter, he reëmbarked for Cayes, in Hayti, whither many emigrant patriots had repaired after the surrender of Carthagena. Bolivar, meanwhile, had also departed from Kingston to Porte au Prince, where, on his promise of emancipating the slaves, Pétion, the president of Hayti, offered him large supplies for a new expedition against the Spaniards in Venezuela. At Cayes he met Brion and the other emigrants, and in a general meeting proposed himself as the chief of the new expedition, on the condition of uniting the civil and military power in his person until the assembling of a general congress. The majority accepting his terms, the expedition sailed April 16, 1816, with him as its commander and Brion as its admiral. At Margarita the former succeeded in winning over Arismendi, the commander of the island, in which he had reduced the Spaniards to the single spot of Pampatar. On Bolivar's formal promise to convoke a national congress at Venezuela, as soon as he should be master of the country, Arismendi summoned a junta in the cathedral of La Villa del Norte, and publicly proclaimed him the commander-in-chief of the republics of Venezuela and New Granada. On May 31, 1816, Bolivar landed at Carupano, but did not dare prevent Marino and Piar from separating from him, and carrying on a war against Cumana under their own auspices. Weakened by this separation, he set sail, on Brion's advice, for Ocumare, where he arrived July 3, 1816, with 13 vessels, of which 7 only were armed. His army mustered but 650 men, swelled, by the enrolment of negroes whose emancipation he had proclaimed, to about 800. At Ocumare he again issued a proclamation, promising "to exterminate the tyrants" and to "convoke the people to name their deputies to congress." On his advance in the direction of Valencia he met, not far from Ocumare, the Spanish general Morales at the head of about 200 soldiers and 100 militia men. The skirmishers of Morales having dispersed his advanced guard, he lost, as an eye-witness records, "all presence of mind, spoke not a word, turned his horse quickly round, and fled in full speed toward Ocumare, passed the village at full gallop, arrived at the neighboring bay, jumped from his horse, got into a boat, and embarked on the Diana, ordering the whole squadron to follow him to the little island of Buen Ayre, and leaving all his companions without any

means of assistance." On Brion's rebukes and admonitions, he again joined the other commanders on the coast of Cumana, but being harshly received, and threatened by Piar with trial before a court-martial as a deserter and a coward, he quickly retraced his steps to Cayes. After months of exertion, Brion at length succeeded in persuading a majority of the Venezuelan military chiefs, who felt the want of at least a nominal centre, to recall Bolivar as their general-in-chief, upon the express condition that he should assemble a congress, and not meddle with the civil administration. Dec. 31, 1816, he arrived at Barcelona with the arms, munitions of war, and provisions supplied by Pétion. Joined, Jan. 2, 1817, by Arismendi, he proclaimed on the 4th martial law and the union of all powers in his single person; but 5 days later, when Arismendi had fallen into an ambush laid by the Spaniards, the dictator fled to Barcelona. The troops rallied at the latter place, whither Brion sent him also guns and reinforcements, so that he soon mustered a new corps of 1,100 men. April 15, the Spaniards took possession of the town of Barcelona, and the patriot troops retreated toward the charity-house, a building isolated from Barcelona, and intrenched on Bolivar's order, but unfit to shelter a garrison of 1,000 men from a serious attack. He left the post in the night of April 5, informing Col. Freitas, to whom he transferred his command, that he was going in search of more troops, and would soon return. Trusting this promise, Freitas declined the offer of a capitulation, and, after the assault, was slaughtered with the whole garrison by the Spaniards. Piar, a man of color and native of Curaçoa, conceived and executed the conquest of the provinces of Guiana; Admiral Brion supporting that enterprise with his gun-boats. July 20, the whole of the provinces being evacuated by the Spaniards, Piar, Brion, Zea, Marino, Arismendi, and others, assembled a provincial congress at Angostura, and put at the head of the executive a triumvirate, of which Brion, hating Piar and deeply interested in Bolivar, in whose success he had embarked his large private fortune, contrived that the latter should be appointed a member, notwithstanding his absence. On these tidings Bolivar left his retreat for Angostura, where, emboldened by Brion, he dissolved the congress and the triumvirate, to replace them by a "supreme council of the nation," with himself as the chief, Brion and Antonio Francisco Zea as the directors, the former of the military, the latter of the political section. However, Piar, the conqueror of Guiana, who once before had threatened to try him before a court-martial as a deserter, was not sparing of his sarcasms against the "Napoleon of the retreat," and Bolivar consequently accepted a plan for getting rid of him. On the false accusation of having conspired against the whites, plotted against Bolivar's life, and aspired to the supreme power, Piar was arraigned before a war council under the presidency of Brion, convicted, con-

demned to death, and shot, Oct. 16, 1817. His death struck Maríño with terror. Fully aware of his own nothingness when deprived of Piar, he, in a most abject letter, publicly calumniated his murdered friend, deprecated his own attempts at rivalry with the liberator, and threw himself upon Bolívar's inexhaustible fund of magnanimity. The conquest by Piar of Guiana had completely changed the situation in favor of the patriots; that single province affording them more resources than all the other 7 provinces of Venezuela together. A new campaign, announced by Bolívar through a new proclamation, was, therefore, generally expected to result in the final expulsion of the Spaniards. This first bulletin, which described some small Spanish foraging parties withdrawing from Calabozo as "armies flying before our victorious troops," was not calculated to damp these hopes. Against about 4,000 Spaniards, whose junction had not yet been effected by Morillo, he mustered more than 9,000 men, well armed, equipped, and amply furnished with all the necessities of war. Nevertheless, toward the end of May, 1818, he had lost about a dozen battles and all the provinces lying on the northern side of the Orinoco. Scattering as he did his superior forces, they were always beaten in detail. Leaving the conduct of the war to Páez and his other subordinates, he retired to Angostura. Defection followed upon defection, and every thing seemed to be drifting to utter ruin. At this most critical moment, a new combination of fortunate accidents again changed the face of affairs. At Angostura he met with Santander, a native of New Granada, who begged for the means of invading that territory, where the population were prepared for a general rise against the Spaniards. This request, to some extent, he complied with, while powerful succors in men, vessels, and munitions of war, poured in from England, and English, French, German, and Polish officers, flocked to Angostura. Lastly, Dr. German Roscio, dismayed at the declining fortune of the South American revolution, stepped forward, laid hold of Bolívar's mind, and induced him to convene, Feb. 15, 1819, a national congress, the mere name of which proved powerful enough to create a new army of about 14,000 men, so that Bolívar found himself enabled to resume the offensive. The foreign officers suggested to him the plan of making a display of an intention to attack Caracas, and free Venezuela from the Spanish yoke, and thus inducing Morillo to weaken New Granada and concentrate his forces upon Venezuela, while he (Bolívar) should suddenly turn to the west, unite with Santander's guerillas, and march upon Bogotá. To execute this plan, he left Angostura Feb. 24, 1819, after having nominated Zea president of the congress and vice-president of the republic during his absence. By the manœuvres of Páez, Morillo and La Torre were routed at Achaguas, and would have been destroyed if Bolívar had effected a

junction between his own troops and those of Páez and Maríño. At all events, the victories of Páez led to the occupation of the province of Barima, which opened to Bolívar the way into New Granada. Every thing being here prepared by Santander, the foreign troops, consisting mainly of Englishmen, decided the fate of New Granada by the successive victories won July 1 and 28, and Aug. 7, in the province of Tunja. Aug. 12, Bolívar made a triumphal entry into Bogotá, while the Spaniards, all the Granadian provinces having risen against them, shut themselves up in the fortified town of Mompox. Having regulated the Granadian congress at Bogotá, and installed Gen. Santander as commander-in-chief, Bolívar marched toward Pamplona, where he spent about 2 months in festivals and balls. Nov. 8, he arrived at Montecal, in Venezuela, whither he had directed the patriotic chieftains of that territory to assemble with their troops. With a treasury of about \$2,000,000, raised from the inhabitants of New Granada by forced contributions, and with a disposable force of about 9,000 men, the 8d part of whom consisted of well disciplined English, Irish, Hanoverians, and other foreigners, he had now to encounter an enemy stripped of all resources and reduced to a nominal force of about 4,500 men, $\frac{1}{2}$ of whom were natives, and, therefore, not to be relied upon by the Spaniards. Morillo withdrawing from San Fernando de Apure to San Carlos, Bolívar followed him up to Calabozo, so that the hostile head-quarters were only 2 days' march from each other. If Bolívar had boldly advanced, the Spaniards would have been crushed by his European troops alone, but he preferred protracting the war for 5 years longer. In October, 1819, the congress of Angostura had forced Zea, his nominee, to resign his office, and chosen Arismendi in his place. On receiving this news, Bolívar suddenly marched his foreign legion toward Angostura, surprised Arismendi, who had 600 natives only, exiled him to the island of Margarita, and restored Zea to his dignities. Dr. Roscio, fascinating him with the prospects of centralized power, led him to proclaim the "republic of Colombia," comprising New Granada and Venezuela, to publish a fundamental law for the new state, drawn up by Roscio, and to consent to the establishment of a common congress for both provinces. On Jan. 20, 1820, he had again returned to San Fernando de Apure. His sudden withdrawal of the foreign legion, which was more dreaded by the Spaniards than 10 times the number of Colombians, had given Morillo a new opportunity to collect reinforcements, while the tidings of a formidable expedition to start from Spain under O'Donnell raised the sinking spirits of the Spanish party. Notwithstanding his vastly superior forces, Bolívar contrived to accomplish nothing during the campaign of 1820. Meanwhile the news arrived from Europe that the revolution in the Isla de Leon had put a forcible end

to O'Donnell's intended expedition. In New Granada 15 provinces out of 22 had joined the government of Colombia, and the Spaniards now held there only the fortresses of Cartagena and the isthmus of Panama. In Venezuela 6 provinces out of 8 obeyed the laws of Colombia. Such was the state of things when Bolivar allowed himself to be inveigled by Morillo into negotiations resulting, Nov. 25, 1820, in the conclusion at Truxillo of a truce for 6 months. In the truce no mention was made of the republic of Colombia, although the congress had expressly forbidden any treaty to be concluded with the Spanish commander before the acknowledgment on his part of the independence of the republic. Dec. 17, Morillo, anxious to play his part in Spain, embarked at Puerto Cabello, leaving the command-in-chief to Miguel de la Torre, and on March 10, 1821, Bolivar notified La Torre, by letter, that hostilities should recommence at the expiration of 80 days. The Spaniards had taken a strong position at Carabobo, a village situated about half-way between San Carlos and Valencia; but La Torre, instead of uniting there all his forces, had concentrated only his 1st division, 2,500 infantry and about 1,500 cavalry, while Bolivar had about 6,000 infantry, among them the British legion, mustering 1,100 men, and 2,000 llaneros on horseback, under Paez. The enemy's position seemed so formidable to Bolivar, that he proposed to his council of war to make a new armistice, which, however, was rejected by his subalterns. At the head of a column mainly consisting of the British legion, Paez turned through a footpath the right wing of the enemy, after the successful execution of which manoeuvre, La Torre was the first of the Spaniards to run away, taking no rest till he reached Puerto Cabello, where he shut himself up with the remainder of his troops. Puerto Cabello itself must have surrendered on a quick advance of the victorious army, but Bolivar lost his time in exhibiting himself at Valencia and Caracas. Sept. 21, 1821, the strong fortress of Cartagena capitulated to Santander. The last feats of arms in Venezuela, the naval action at Maracaibo, in Aug. 1823, and the forced surrender of Puerto Cabello, July, 1824, were both the work of Padilla. The revolution of the Isla de Leon, which prevented O'Donnell's expedition from starting, and the assistance of the British legion, had evidently turned the scale in favor of the Colombians.—The Colombian congress opened its sittings in Jan. 1821, at Cucuta, published, Aug. 30, a new constitution, and after Bolivar had again pretended to resign, renewed his powers. Having signed the new constitution, he obtained leave to undertake the campaign of Quito (1822), to which province the Spaniards had retired after their ejection by a general rising of the people from the isthmus of Panama. This campaign, ending in the incorporation of Quito, Pasto, and Guayaquil into Colombia, was nominally led by Bolivar and Gen. Sucre, but the few suc-

cesses of the corps were entirely owed to British officers, such as Col. Sands. During the campaigns of 1823-'24, against the Spaniards in upper and lower Peru, he no longer thought it necessary to keep up the appearance of generalship, but leaving the whole military task to Gen. Sucre, limited himself to triumphal entries, manifestos, and the proclamation of constitutions. Through his Colombian body-guard, he swayed the votes of the congress of Lima, which, Feb. 10, 1823, transferred to him the dictatorship, while he secured his reelection as president of Colombia by a new tender of resignation. His position had meanwhile become strengthened, what with the formal recognition of the new state on the part of England, what with Sucre's conquest of the provinces of upper Peru, which the latter united into an independent republic, under the name of Bolivia. Here, where Sucre's bayonets were supreme, Bolivar gave full scope to his propensities for arbitrary power, by introducing the "Bolivian Code," an imitation of the *Code Napoléon*. It was his plan to transplant that code from Bolivia to Peru, and from Peru to Colombia—to keep the former states in check by Colombian troops, and the latter by the foreign legion and Peruvian soldiers. By force, mingled with intrigue, he succeeded indeed, for some weeks at least, in fastening his code upon Peru. The president and liberator of Colombia, the protector and dictator of Peru, and the godfather of Bolivia, he had now reached the climax of his renown. But a serious antagonism had broken out in Colombia, between the centralists or Bolivarists and the federalists, under which latter name the enemies of military anarchy had coalesced with his military rivals. The Colombian congress having, at his instigation, proposed an act of accusation against Paez, the vice-president of Venezuela, the latter broke out into open revolt, secretly sustained and pushed on by Bolivar himself, who wanted insurrections, to furnish him a pretext for overthrowing the constitution and reassuming the dictatorship. Beside his body-guard, he led, on his return from Peru, 1,800 Peruvians, ostensibly against the federalist rebels. At Puerto Cabello, however, where he met Paez, he not only confirmed him in his command of Venezuela, and issued a proclamation of amnesty to all the rebels, but openly took their part and rebuked the friends of the constitution; and by decree at Bogota, Nov. 23, 1826, he assumed dictatorial powers. In the year 1827, from which the decline of his power dates, he contrived to assemble a congress at Panama, with the ostensible object of establishing a new democratic international code. Plenipotentiaries came from Colombia, Brazil, La Plata, Bolivia, Mexico, Guatemala, &c. What he really aimed at was the erection of the whole of South America into one federative republic, with himself as its dictator. While thus giving full scope to his dreams of attaching half a world to his name, his real power was rapidly slipping from his

grasp. The Colombian troops in Peru, informed of his making arrangements for the introduction of the Bolivian code, promoted a violent insurrection. The Peruvians elected Gen. Lamar as the president of their republic, assisted the Bolivians in driving out the Colombian troops, and even waged a victorious war against Colombia, which ended in a treaty reducing the latter to its primitive limits, stipulating the equality of the 2 countries, and separating their debts. The congress of Ocaña, convoked by Bolivar, with a view to modify the constitution in favor of his arbitrary power, was opened March 2, 1828, by an elaborate address, insisting on the necessity of new privileges for the executive. When, however, it became evident that the amended project of the constitution would come out of the convention quite different from its original form, his friends vacated their seats, by which proceeding the body was left without a quorum, and thus became extinct. From a country-seat, some miles distant from Ocaña, to which he had retreated, he published another manifesto, pretending to be incensed at the step taken by his own friends, but at the same time attacking the convention, calling on the provinces to recur to extraordinary measures, and declaring that he was ready to submit to any load of power which might be heaped upon him. Under the pressure of his bayonets, popular assemblies at Caracas, Oathagena, and Bogota, to which latter place he had repaired, anew invested him with dictatorial power. An attempt to assassinate him in his sleeping room at Bogota, which he escaped only by leaping in the dark from the balcony of the window, and lying concealed under a bridge, allowed him for some time to introduce a sort of military terrorism. He did not, however, lay hands on Santander, although he had participated in the conspiracy, while he put to death Gen. Padilla, whose guilt was not proved at all, but who, as a man of color, was not able to resist. Violent factions disturbing the republic in 1829, in a new appeal to the citizens, Bolivar invited them to frankly express their wishes as to the modifications to be introduced into the constitution. An assembly of notables at Caracas answered by denouncing his ambition, laying bare the weakness of his administration, declaring the separation of Venezuela from Colombia, and placing Paez at the head of that republic. The senate of Colombia stood by Bolivar, but other insurrections broke out at different points. Having resigned for the 5th time, in Jan. 1830, he again accepted the presidency, and left Bogota to wage war on Paez in the name of the Colombian congress. Toward the end of March, 1830, he advanced at the head of 8,000 men, took Caracuta, which had revolted, and then turned upon the province of Maracaibo, where Paez awaited him with 12,000 men, in a strong position. As soon as he became aware that Paez meant serious fighting, his courage collapsed. For a moment he even thought to subject himself to Paez, and

declare against the congress; but the influence of his partisans at the congress vanished, and he was forced to tender his resignation, notice being given to him that he must now stand by it, and that an annual pension would be granted to him on the condition of his departure for foreign countries. He accordingly sent his resignation to the congress, April 27, 1830. But hoping to regain power by the influence of his partisans, and a reaction setting in against Joachim Mosquera, the new president of Colombia, he effected his retreat from Bogota in a very slow manner, and contrived, under a variety of pretexts, to prolong his sojourn at San Pedro, until the end of 1830, when he suddenly died. The following is the portrait given of him by Ducoudrey-Holstein: "Simon Bolivar is 5 feet 4 inches in height, his visage is long, his cheeks hollow, his complexion livid brown; his eyes are of a middle size, and sunk deep in his head, which is covered thinly with hair. His mustaches give him a dark and wild aspect, particularly when he is in a passion. His whole body is thin and meagre. He has the appearance of a man 65 years old. In walking, his arms are in continual motion. He cannot walk long, but becomes soon fatigued. He likes his hammock, where he sits or lolls. He gives way to sudden gusts of resentment, and becomes in a moment a madman, throws himself into his hammock, and utters curses and imprecations upon all around him. He likes to indulge in sarcasms upon absent persons, reads only light French literature, is a bold rider, and passionately fond of waltzing. He is fond of hearing himself talk and giving toasts. In adversity, and destitute of aid from without, he is perfectly free from passion and violence of temper. He then becomes mild, patient, docile, and even submissive. In a great measure he conceals his faults under the politeness of a man educated in the so-called *beau monde*, possesses an almost Asiatic talent for dissimulation, and understands mankind better than the mass of his countrymen." By decree of the congress of New Granada, his remains were removed in 1842 to Caracas, and a monument erected there in his honor.—See *Histoire de Bolivar, par G^{en}. Ducoudrey-Holstein, continuée jusqu'à sa mort, par Alphonse Viollot* (Paris, 1881), "Memoirs of Gen. John Miller (in the service of the Republic of Peru)," Col. Hippius's "Account of his Journey to the Orinoco" (Lond. 1819).

BOLIVIA, a state of South America, lying between lat. 10° 21' and 25° 38' S., and long. 57° 36' and 70° 30' W., bounded N. by the Brazilian province of Alta Amazonas, E. by the provinces of Matto Grosso and Parana, from which it is almost completely separated by the Mamore and Guapore, affluents of the Madeira river, and by the Paraguay river; S. by the Argentine confederation and the republic of Chili, from which it is separated by the river Salado; W. by the Pacific ocean to the mouth of the river Loa, and thence by the republic of Peru, from which it is separated by the Andes,

Lake Titicaca, and the Rio Purus. The greatest breadth of the state is 760 miles, its greatest length 1,100 miles. Its frontier is over 4,000 miles, of which only 250 are sea-coast. The following table gives the names of the departments into which it is divided, together with the number of square miles, population, capitals and their population, according to the latest authorities:

Departments.	Area, sq. m.	Popula- tion.	Pop. to sq. m.	Capitals.	Pop. of Cap.
Beni	112,439	37,000	0.33	Apolobamba,	1,000
La Paz	86,418	884,104	10.79	La Paz,	48,849
Cochabamba ..	31,634	393,000	8.93	Cochabamba,	80,896
Chuquisaca ..	29,183	151,690	5.24	Chuquisaca, or Sucre,	12,385
Santa Cruz ..	184,285	69,000	0.37	Santa Cruz,	4,000
Oruro	35,842	117,000	3.26	Oruro,	5,637
Potosí	57,237	297,000	5.19	Potosí,	38,000
Tarja	31,213	62,764	2.01	Tarja,	5,129
Atacama, or Cobija.....	33,000	22,000	0.66	Cobija, or Pu- erto de la Mar	2,000
Total	473,298	1,425,753	3.01		

Bolivia, though comprising but a limited territory, possesses a remarkable variety of climate, soil, and productions. Its south-western portion, lying on the Pacific, is an arid and gloomy desert, on which no rain falls, and which shows no traces of vegetation, except where mountain torrents have forced their way to the ocean, and fertilized a few narrow valleys. The shore is high, rocky, and forbidding, and the ascent of the Andes from this side steep and difficult. The Andes themselves here spread out into a broad, elevated plateau, much wider than in any other part of their course. This plateau, about 14,000 feet above the level of the sea, is from 200 to 800 miles in breadth, and along its eastern border the giant peaks of the East Cordillera tower aloft, to the height of from 18,000 to 25,000 feet. In no portion of their course are so many lofty peaks grouped together as in central Bolivia. Of 11 peaks enumerated by Mr. Pentland, but 2 were less than 20,000 feet in height. Their names and height are as follows:

Mountains.	Feet.	Mountains.	Feet.
Tucora	13,890	Nevado de Sorata	25,800
Chipicani	19,740	Illimani	24,200
Lahama	22,350	Huayna Potosí	20,260
Parinacots	22,030	Chachacomani, 2 sum- mits	20,235
Pomape	21,700		
Guateli	22,000		

A later measurement gives the Sorata 21,286, and the Illimani 21,149. Beyond these grand sentinel mountains the eastern slope of the Andes is gradual. Still further eastward stretches a vast plain, covered with the most fertile soil, on which, for hundreds of miles, there is not a rock or pebble, and through which thread, with gentle flow, the numerous affluents of the Amazon and Madeira. In time of flood, portions of this plain are overflowed, and the vast forests, whose hues of vivid green are perennial, admitting to the eye of the observer glimpses of the watery waste, seem like islands of foliage on some placid lake. Still further east, a chain of low hills separates the head waters of the Paraguay river from those

of the Madeira; yet so gentle is the elevation that in time of flood the Indian can paddle his boat from the sources of one into those of the other.—One of the most remarkable natural features of this country is its mountain lakes. The largest of them, Lake Titicaca, is situated on the lofty plateau between the E. and W. Cordilleras, 12,800 feet above the sea level. It is about 80 miles long and 40 broad, and although it receives numerous streams, it has but one visible outlet, the Desaguadero river, which connects it with Lake Pampas Aullagas, 180 miles S. E. of it, which has no outlet, but which is at about the same elevation, and is about half the size of Lake Titicaca. The latter has several islands, upon one of which Manco Capac, the first inca of the last Peruvian dynasty, is said to have descended. The triangular rush peculiar to this lake is of great value to the Indians of the Titicaca basin, furnishing them with food, clothing, boats, &c. There are in eastern Bolivia, in the lowlands, several other lakes of considerable size, but they are not fully described. Lake Gaiba is one of the largest of these. The principal rivers are the Beni, Mamore, Rio Grande, Chapri, and Itenez or Guapore, tributaries of the Madeira; and the Pilcomayo and Paraguay, affluents of the La Plata. The smaller streams are countless.—On the elevated plains of the Titicaca basin there is frost every night, and ice forms of sufficient strength to bear a man's weight, but the sky is always cloudless and the air dry. On some portions of this plateau, however, there is rain during 3 months of the year. West of the Andes no rain has fallen within the memory of man until the last year (1857). But within a day's journey from the summit of the eastern Cordillera, places may be found where rain falls every day in the year. The inhabitants, like those of Mexico, distinguish 3 climatic regions, viz.: The *puno*, cold, elevated, and producing, from the rarefaction of the atmosphere, difficulty of respiration in those unaccustomed to it. To this climate belongs the whole elevated plain between the E. and W. Cordilleras. The higher mountainous districts are designated as *puno bravo*. This is the home of the guanaco and vicuña, while the llama and alpaca thrive best in the *puno* region. The *paramo* is a more temperate climate, occupying the slopes of the eastern Cordillera and the head waters of the Paraguay. It is the region of grains and fruits of the temperate zone. Below this are the *yungas*, or valleys, which have all the characteristics of the torrid zone, its terrible heat and its prolific vegetation; the coffee-shrub, the cacao, the coca, and the other tropical fruits and plants, are found here in the richest profusion. A man mounted on a fleet horse can easily pass from the *puno* to the *yungas* in 3 days' time.—The vegetation of Bolivia is, of course, as varied as its climate. On the slopes of the loftiest mountains, and in the cold and elevated plains, it is scanty and alpine in character. The trees are very few, and the bare and dreary plains exhibit only occa-

sional tufts of *lycopodium hastatum*, *verbena mimina* and *laurelia acaulis*, clinging in the clefts of the rocks, and in the course of ages attaining to considerable size and a dense resinous structure. Near the shores of Lake Titicaca there is a very considerable variety of grasses, which, with the *rotora* rush, already mentioned, form pasturage for considerable herds of cattle, goats, and hogs. On the upper portion of the eastern slope of the Andes, grains of every description flourish, and several varieties of cactus, one of them 40 feet in height, display their peculiar forms, and their bright, gay flowers. Below these is a belt of acacias; still lower, the bamboo (*bambusa*), the palm, and the tree ferns, are found in abundance. Among the more valuable products of the plains and lower slopes of the Cordillera, are the bamboo, the paper mulberry, the inner bark of which furnishes the Indian his shirts, the maté, or Paraguay tea, the balsam of Peru, and the cinchona, or Peruvian bark. The low plains of eastern Bolivia abound in the richest tropical fruits and plants, and the inhabitants raise, either for consumption or export, coffee, cacao, tobacco, cotton, maize, indigo, yuca or manioc, batatas, guavas, sugar-cane, the chirimoya, and, in their esteem, the most important of all, coca. This is the leaf of the *erythroxylon Peruvianum*, and is chewed by the inhabitants as a stimulant, like the betel of the Hindoos and Malays. Its annual consumption in Bolivia is reckoned at more than 10,000,000 pounds. This is supposed to be the native country of the common potato (*solanum tuberosum*), and the plant is cultivated quite extensively by the Indians of the Titicaca basin. Lient. Gibbon found them small, but of excellent quality.—The inhabitants of Bolivia are: 1, Indians of various tribes; 2, creoles of Spanish descent; and, 3, mestizos, or mixed races, divided into cholos, or descendants of European and Indian parents, and zambos, who unite European and negro blood. There are also a few negroes in the republic. The Indians constitute nearly three-fourths of the population; those living in the Titicaca basin are Aymaras; north and east of these are the Quichuas; both these tribes were formerly the subjects of the Incas. The plains east of the Cordillera are inhabited by Mojos, and the head waters of the Paraguay, as well as most of the region bordering on the states of the Argentine confederation, by the Chiquitos and Yuracares. The Spanish creoles are most numerous in the mining districts, and in Cochabamba. The mestizos are principally located west of the Andes. The Aymaras and Quichuas are a simple-hearted, friendly people, easily influenced by superstition, retaining much of the gentleness and amiability for which they were remarkable in the first discovery of the country by the Spaniards; averse to severe labor, mining, and the like, but fond of pastoral and agricultural pursuits; somewhat addicted to the use of *chicha* (an intoxicating drink made from the maize), but possessing many excellent traits. Numerous

indications of their former numbers and civilization still remain, such as the ruins of towns of stone and sun-dried brick, great numbers of tombs, well built, and filled with mummies, &c. The eastern Indians are more warlike. The Chiquitos and Yuracares are savages, and lead a nomadic life to some extent; the Mojos are intelligent, and devoted to agricultural pursuits, but scorn the control of the Spanish creoles.—The foreign trade of Bolivia is not large, and is confined almost entirely to the export of bullion, tin, and alpaca wool, to Europe and the United States, and grain, coca, soap, and silver to Peru, and the importation of furniture and manufactured goods from the former countries, and wine, rum, and dried fish from Peru.—The imports coastwise amount to about \$500,000; the internal traffic with Peru and Chili to somewhat more than \$1,500,000. The exports, including bullion, are of about equal amount. The commerce has decreased since 1840, and so long as the people of the country adhere to the old Spanish custom of transporting all goods on the backs of mules, it can never become considerable. Good roads, and railroads, where practicable, would make Bolivia, in a few years, one of the richest states of South America. The manufactures are mostly conducted on a small scale, and the difficulty of transporting machinery must prevent any great success in them. The people, however, are ingenious, and display great skill in the production of such articles as are within the limit of their means. Woollen and cotton cloths, hats made from the vicuña wool, tin-ware, and fire-arms of good quality, are manufactured by them. The mines are much less extensively worked than formerly, partly from the increased cost, as the leads become deeper, but mainly from the unwillingness of the Indians, who have been the principal miners, to continue in a business so laborious, and which yielded so small a measure of comfort and enjoyment. According to government statistics, the production of gold and silver, which, in the 5 years ending in 1806, had reached the sum of \$21,186,460, had fallen off in the 5 years ending with 1846, to \$9,789,640. Probably these amounts fall considerably short of the actual yield of each period, but the proportion which they indicate shows a very great reduction in the amount of mining.—The early history of Bolivia is included in that of Peru, of which it was formerly an integral part; it is only since 1825 that it has had a separate national existence. It was erected into an independent state, by a declaration of its citizens, Aug. 5, 1825, and received its name from the liberator, Simon Bolivar. A constitutional congress assembled Aug. 11, decreed a republican government, called Gen. Sucre to the presidency, and requested the liberator to prepare a constitution. He complied, and his constitution, which was a limited monarchy in all but the name, was adopted the succeeding year, but soon abolished; and from 1829 almost to the

present time, this unhappy country has been the scene of constant revolutions. Gen. Balzu, its president in 1851, had revived the constitution of 1838, which had been for some time in abeyance, and which limited the powers of the presidents. He is represented as a man of intelligence and ability.

BOLKHOV, a town of Russia in Europe, on the Noogra, 80 miles north of Orel. It has 16,000 inhabitants, 22 churches, and numerous manufactories of leather, gloves, hosiery, and soap. It is well built, mostly of wood.

BOLLAN, WILLIAM, an American agent in England, born in England, emigrated to Boston, Mass., in 1740, died in England in 1776. He was collector of customs for Salem and Marblehead, Mass., when he was sent to England in 1745, by the colony of Massachusetts, to obtain a reimbursement for the expenses incurred in the expedition against Cape Breton, and in 8 years returned with £188,649. By the assistance of Alderman Beckford, he afterward obtained in England, and transmitted to Massachusetts, copies of 88 letters written home by Gov. Barnard, 1768-'69. For this act he was denounced in parliament by Lord North, and commended by Mr. Hancock in the American house of representatives.

BOLLAND, or **BOLLANDUS**, JOHN VAN, a learned Jesuit, born at Tirlemont, in Belgium, Aug. 13, 1596, died Sept. 12, 1665. As early as 1607, Heribert Rosweyd, a distinguished Jesuit of Antwerp, had formed the design of collecting memoirs of the lives of all those who had been canonized in the church. This design was finally approved by the ecclesiastical authorities, and Bolland was appointed to carry it into effect. At his request Godfrey Henschen was appointed, in 1635, as his coadjutor. The plan pursued was chronological, taking up the saints in the order of the calendar. The work was entitled by Bolland *Acta Sanctorum*. The first 2 volumes treating of the January saints, were published in 1643. The February saints, in 8 volumes, were completed in 1658. Bolland did not live to finish the March saints, though he prosecuted the work until his death. He was thus the first in modern times to attempt the hagiography of the Roman church, and was succeeded from time to time by a series of writers in prosecution of the original plan of Rosweyd. From Bolland the successive writers of the *Acta Sanctorum* have been designated and known in ecclesiastical history as Bollandists. Five years before the death of Bolland, the order appointed another colleague, Daniel Papebroek, and the work went on until the March and April saints were completed, and 16 days of May, when Henschen died in 1681. Other successive appointments followed, until, with two interruptions (the first in 1773, when the order of Jesuits was abolished, and the second in the French revolution), the work reached 58 vols. It was then for a time a suspended, but resumed in 1837, under the patronage of the Belgian government,

which appropriated a yearly amount of 6,000 francs for the continuation of the work. To the Bollandists the world owes the accumulation of a vast amount of historic material, in the course of the prosecution of the *Acta Sanctorum*. Some important historical points were settled in the collections made by Papebroek in his travels. The *Acta Sanctorum*, although the colossal enterprise which must ever distinguish the Jesuits, both for the magnitude of its plan and the intelligence and learning which characterize its execution, was not the first attempt of the kind. It had for materials, previously collected by various persons, the *Acta Martyrum*, and several private collections, which bore the names of Eusebius, Bede, and others. Among the principal Bollandists, beside those already named, were Baert, Bosch, Suykens, Hubens, Berthod, Ghesquiere, and Janning. The present continuation is under the editorial care of Boone, Coppens, Joseph van der Moere, and Joseph van Hecke, who published the 57th vol. in 1856.

BOLLES, LUCIUS, D. D., a Baptist divine, born in Ashford, Conn., Sept. 25, 1779, died in Boston, Jan. 8, 1844. He graduated at Brown university in 1801. He became interested in religion during one of his college vacations, while on a visit to Hartford, Conn., and seems to have had his thoughts directed at once to the work of the gospel ministry. As the Baptists had no theological school at that time, he commenced the study of theology under the Rev. Dr. Stillman, pastor of the first Baptist church, Boston, with whom he remained for 8 years. While pursuing his studies in Boston, he had occasionally preached to a Baptist society in Salem, Mass., with which he became connected as pastor, in Dec. 1804, and where he remained for over 22 years. No minister ever received more constant manifestations of confidence from his people, and few have been more successful in promoting the objects of the ministry. In 1824 he was elected assistant corresponding secretary of the board of the Baptist general convention for foreign missions, then established at Washington. In 1826, on the transference of the board to Boston, he was chosen corresponding secretary, the duties of which office he continued to perform for more than 16 years, with marked ability, and general acceptance.

BOLLMANN, ERIC, a German physician and politician, born at Hoya, in 1769, died in London, in 1821. He practiced medicine in Carlsruhe and Paris, and in the latter city became an actor in the revolution. He conducted Count Narbonne to London, and made an unsuccessful attempt to liberate Lafayette from imprisonment at Olmütz, for which he was arrested and banished. He came to America, returned to Europe in 1814, took part in the congress of Vienna, and made another short visit to this country, after which he lived in London.

BOLOGNA, a delegation of the papal states, bounded N. by Ferrara, E. by Ravenna, S. by Tuscany, and W. by Modena; area 1,480 sq. m.;

pop. in 1858, 375,631. The natural fertility of the district is so great, that, although only partially cultivated, it produces abundant crops of grain, oil, wine, figs, almonds, chestnuts, hemp, flax, &c.—Also the capital city (anc. *Bononia*) of the province of the same name, situated at the foot of the Apennines, between the rivers Reno and Savena; pop. 75,000. It was taken from the Lombards by Charlemagne, but in the latter part of the 10th century threw off the French yoke, and established a republic. In the middle ages, Bologna sided with the Guelphs. In 1506, it was annexed to the papal dominions by Pope Julian II. In 1796, it was taken by the French, and became part of a new republic, and subsequently of the kingdom of Italy. On the downfall of Napoleon, it reverted to the papal states. In 1848, the Austrian forces were repulsed by the inhabitants, but finally, on May 16, 1849, they were obliged to surrender, after a heroic defence. Since then the Austrians have maintained possession, in accordance with a treaty with the papal states. The university of Bologna is said to have been founded by Theodosius, in 425, and to have been restored by Charlemagne. In the middle ages it had several thousand students; the present number is about 800. Among the professors have been Galvani, Orioli, Tommasini, Mezzofanti; the university is also famous for its female professors, as Clotilde Tambroni, professor of Greek, who died in 1817, Novella d'Andrea, professor of canon law in the 14th, and Laura Bassi, who received the degree of doctor of philosophy in the first part of the 18th century. Mezzofanti for some time presided over the university library, which contains 150,000 volumes and 1,000 MSS. Another public library, with 88,000 volumes, in the convent of San Domenico, was bequeathed to the town by Father Magnani. The college Venturoli, founded in 1825, is devoted to architecture. A college for Spanish students was founded by Cardinal Albornoz, and one for Flemish students by John Jacobs, a Flemish goldsmith. In the centre of the city is the Asinelli tower, 820 feet high, and the Garisenda, about 160 feet high, and which leans to one side about 9 feet. There are, beside the cathedral, 78 churches, 85 convents, 88 nunneries, 9 hospitals, several schools, a military academy, and various benevolent institutions. Pope Clement XIII. founded the academy of fine arts, also called Clement academy, which possesses the finest works of the founders of the Bolognese school of painting, as Caracci, Guido Reni, Domenichino, Albani, and other native artists. Not less than 8 popes have been natives of Bologna, among whom Benedict XIV. is the most eminent. Among other persons of distinction born at Bologna may be mentioned the naturalist Aldrovandi, the anatomist Mondino, Malpighi, Marsigli, Manfredi, and Galvani.

BOLOGNA, GIOVANNI DI, a sculptor and architect, born at Douay, in Flanders, about 1524, died in Florence in 1608. At an early age he

went to Rome, where he passed 2 years in studying the masterpieces of art. Going to Florence, he was attracted by the works of Michel Angelo, and determined to pass the rest of his life there. He rapidly rose to the foremost rank among sculptors, and few artists were charged with the execution of so many and such important works. His surname of Bologna seems to have been derived from the celebrated fountain in that city, designed by himself, of which the crowning colossal figure of Neptune is one of the wonders of modern art. At Florence, however, where, with occasional intermissions, he constantly resided, are to be found his finest works, such as the celebrated "Rape of the Sabine Women," and the equally celebrated bronze of Mercury just springing into the air, with one foot still upon the globe.

BOLOGNA VIAL, a name given to rudely shaped flasks of glass, which, in making, are suddenly cooled without annealing. They are made to illustrate the peculiar effects of the annealing process.

BOLOGNIAN STONE, a peculiar variety of sulphate of barytes, found at Monte Paterno, near Bologna. It is of fibrous, radiated structure, and possesses the singular property, when calcined, pulverized, converted into a paste, and dried, of emitting a phosphorescent light, which is sometimes sufficient to enable one to read.

BOLONCHEN, a village of Yucatan; pop. 7,000. In the plaza, or square of the village, are 9 wells, cut through a stratum of rock, and communicating with a common reservoir. In the vicinity is a remarkable cave, which has been carefully explored by Mr. Stephens.

BOLOR TAGH, or BELUR TAGH, a chain of mountains in central Asia, separating Independent Tartary from the Chinese empire, and connecting the systems of the Altai and the Himalaya. Its culminating points exceed 2,000 feet in height.

BOLSENA, a town of the papal states, on the lake of the same name, 56 miles N. N. W. of Rome; pop. 1,800. In the immediate vicinity stood the ancient Volsinium, one of the most powerful of the Etruscan cities. Some remains of its temples, including several granite columns, are still in existence. The lake of Bolsena, which is supposed to fill an ancient crater, exhales a deadly malaria during the summer season. It is about 9 miles long, 7 miles broad, and 285 feet deep. The shores are formed by finely wooded hills, presenting much beautiful scenery; it has 2 small islands, called Martana and Bisentina, believed once to have been floating, and it discharges its surplus waters into the Mediterranean by the Marta river.

BOLSON DE MAPIMI, a part of Durango, Mexico; area about 60,000 sq. m. It is a wild, mountainous tract of country, peopled chiefly by wandering Apaches.

BOLSOVER STONE, the building stone selected by the commissions of scientific and

practical men, appointed by the government of Great Britain, for the construction of the new houses of parliament. Good building stone is difficult to find in England, and none has yet been used that entirely withstands the disintegrating effect of its moist climate. The stone selected is a yellow dolomite, or magnesian carbonate of lime, of crystalline structure, found in the neighborhood of Bolsover, in Derbyshire. It is of very uniform grain, is worked with ease, and is well adapted for long preserving the sharp lines of the complicated ornamentation to which it is applied in the splendid structures of the British parliament.

BOLSWERT, **BOETIUS ADAM**, called Bolswert after his native place in Friesland, a Dutch engraver, born about 1580, died in 1684, author of many valuable engravings after designs of Bloemaert and Rubens.—His younger brother, **SOHRETTUS ADAM**, rose to higher fame in the same art, especially distinguishing himself by his prints after some of the best works of Rubens and Vandyke. Both brothers practised their art at Antwerp.

BOLT, a cylindrical or square bar of metal, with a head at one end and a screw-thread and nut at the other, used in ship and house building, and in machine shops, to bind together timber, metal, or masonry. Bolts are generally made of iron of inferior quality, which must be such that the admixture of foreign substances, which diminishes its cohesive strength and malleability, does not, at the same time, render it more liable to rust. This last consideration is especially important in the United States, where iron exposed in the open air rusts through in a much shorter time than in Europe. Most bolts are made of rod-iron, cut of the required length, and the heads forged, either by turning over the ends of the rods, or by welding to them a head punched, like a nut, out of sheet-iron. The bolts are then passed through the hollow spindle of a lathe, and the threads cut in the usual manner, when nuts are screwed on and the bolts are ready for market. A very important improvement in this manufacture was patented in England in 1857, by Mr. A. H. Renton, who is proprietor of the patent, but not the inventor. It consists in raising up the screw-threads by forging instead of cutting out the metal between them. This is done by placing the end of the bolt heated red hot between 2 steel dies, each similar to a half nut, one of which is made to move up and down above the other. The threads are thus stamped with great facility, and are much tougher than when cut. Moreover, as the cutting of the screw is the most costly part of the work in bolt making, the new process considerably reduces the price of bolts.

BOLTON, or **BOULTON**, **EDMUND**, an English antiquary of the 17th century, the author of a number of curious treatises, the chief of which, entitled "Nero Cæsar, or Monarchie Depraved" (Lond. 1624), contains an account of the insurrection under Boadicea.

BOLTON LE MOORS, a manufacturing town and borough of Lancashire, England, 12 miles N. W. of Manchester; pop. 61,171. The Orol, a tributary of the Jewell, divides the place into Great and Little Bolton. The manufacture of woollens was introduced here by the Flemings in 1387, but the inventions of Arkwright and Crompton, both natives of the place, laid the foundation of its present prosperity. It is now one of the principal seats of the cotton manufacture in England. In 1849, there were 53 cotton mills in operation, giving employment to 9,759 persons. Bolton has also extensive foundries and iron works, paper, flax, and saw mills. Numerous coal-pits are worked in the vicinity. The town is well supplied with water. It is connected by canal and railway with Manchester and Bury, and by railway with Liverpool, Preston, Leigh, and Blackburn. It sends 2 members to the house of commons.

BOLZANO, **BERNHARD**, a Bohemian Roman Catholic theologian and philosopher, born at Prague, Oct. 5, 1781, died Dec. 18, 1848. From 1805 to 1820 he was professor and chaplain at the university of Prague, but was accused of insidiously instilling into the minds of the students the heresies of Schelling and Hegel, and was dismissed from his office. He left many writings, of which his *Wissenschaftslehre* is the most important.

BOMARSUND, a narrow channel between the island of Ålands and Vardo, at the entrance of the gulf of Bothnia. The Russian fortifications to the harbor of Bomarsund were destroyed by the British and French fleets during the war of 1854. The channels leading up to Bomarsund were blockaded at the end of July by 4 British ships and a few small steamers. Shortly afterward strong detachments of the allied fleets arrived, with the admirals Napier and Parseval-Deschênes, followed, Aug. 7, by the line-of-battle ships with Gen. Baraguay d'Hilliers and 12,000 troops, mostly French. The Russian commander, Gen. Bodisco, was compelled to surrender on Aug. 16, the allies continuing to occupy the island until the end of the month, when the whole of the fortification was blown up. The trophies of the victors were 112 mounted guns, 79 not mounted, 3 mortars, 7 field guns, and 2,285 prisoners. The principal military interest offered by this siege is its setting completely at rest the question as to the employment of uncovered masonry in fortifications with land-fronts.

BOMB, or **SHELL**, a hollow iron shot for heavy guns and mortars, filled with powder, and thrown at a considerable elevation, and intended to act by the force of its fall and explosion. They are generally the largest of all projectiles used, as a mortar, being shorter than any other class of ordnance, can be made so much larger in diameter and bore. Bombs of 10, 11, and 18 inches are now of common use; the French, at the siege of Antwerp in 1831, used a mortar and shells cast in Belgium, of 24 inches calibre. The

powder contained in a bomb is exploded by a fuze or hollow tube filled with a slow-burning composition, which takes fire by the discharge of the mortar. These fuzes are so timed that the bomb bursts as short a time as possible after it has reached its destination, sometimes just before it reaches the ground. Beside the powder, there are sometimes a few pieces of Valenciennes composition put into the shell, to set fire to combustible objects, but it is maintained that these pieces are useless, the explosion shattering them to atoms, and that the incendiary effects of shells without such composition are equally great. Bombs are thrown at angles varying from 15° to 45°, but generally from 80° to 45°; the larger shells and smaller charges having the greatest proportional ranges at about 45°, while smaller shells with greater charges range furthest at about 80°. The charges are in all instances proportionally small: a 18-inch bomb weighing 200 lbs., thrown out of a mortar at the elevation of 45°, with a charge of 3½ lbs. powder, ranges 1,000 yards, and with 20 lbs. or $\frac{1}{10}$ of its weight, 4,200 yards. The effects of such a bomb, coming down from a tremendous height, are very great if it falls on any thing destructible. It will go through all the floors in a house, and penetrate vaulted arches of considerable strength; and, though a 18-inch shell only contains about 7 lbs. of powder, yet its bursting acts like the explosion of a mine, and the fragments will fly to a distance of 800 or 1,000 yards if unobstructed. On the contrary, if it falls on soft soil, it will imbed itself in the earth to a depth of from 8 to 12 feet, and either be extinguished or explode without doing any harm. Bombs are therefore often used as small mines, or *fougasses*, being imbedded in the earth about a foot deep in such places where the enemy must pass; to fire them, a slow match or train is prepared. This is the first shape in which they occur in history: the Chinese, according to their chronicles, several centuries before our era used metal balls filled with bursting composition and small pieces of metal, and fired by a slow match. They were employed in the defence of defiles, being deposited there on the approach of the enemy. In 1232, at the siege of Kai-fong-fu, the Chinese used, against an assault, to roll bombs down the parapet among the assailant Mongols. Mahmood Shah of Guzerat, in the siege of Champaneer, in 1484, threw bombs into the town. In Europe, not to mention earlier instances of a more doubtful character, the Arabs in Spain, and the Spaniards after them, threw shells and carcasses from ordnance after the beginning of the 14th century, but the costliness and difficulties of manufacturing hollow shot long prevented their general introduction. They have become an important ingredient of siege artillery since the middle of the 17th century only.

BOMB KETCH is now generally used to designate the more old-fashioned sort of mortar vessels (*galioles à bombes*). They were built strong enough to resist the shock caused by the

recoil of the mortar, 60 to 70 feet long, 100 to 150 tons burden; they drew from 8 to 9 feet water, and were rigged usually with 2 masts. They used to carry 2 mortars and some guns. The sailing qualities of these vessels were naturally very inferior. A tender, generally a brig, was attached to them, which carried the artillerymen and the greater part of the ammunition, until the action commenced.

BOMB LANCIE, an instrument recently introduced in the whale fishery, being shot into the body of the whale, in which it explodes. One called Brande's patent bomb lance has been for some time in use, and the manufacture of them, as of the large muskets from which they are discharged, is carried on at Norwich, Connecticut. The lance consists of a thin cylindrical shell of iron armed with a sharp and heavy point of a triangular section. The shell is made open at its rear end, but after receiving the powder and a suitable piece of fuze, it is stopped watertight by a layer of melted lead. From the fact of the fuze enclosed in the solid lead burning instantly when fired, it is found necessary to use two leaden diaphragms, between which a proper quantity of fuze is coiled. The muskets for shooting these lances are very heavy, the charge of powder being about 4 ounces. Its explosion fires the fuze, and the explosion of the bomb follows in a few seconds in the body of the whale.

BOMB-PROOF, the state of a roof strong enough to resist the shock of bombs falling upon it. With the enormous calibres now in use, it is almost impossible, and certainly as yet not worth while, to aim at absolute security from vertical fire for most buildings covered in bomb-proof. A circular vault 3½ feet thick at the keystone, will resist most shells, and even a single 18-inch shell might not break through; but a second one could in most cases do so. Absolutely bomb-proof buildings are therefore confined to powder magazines, laboratories, &c., where a single shell would cause an immense explosion. Strong vaults covered over with 3 or 4 feet of earth, will give the greatest security. For common casemates the vaults need not be so very strong, as the chance of shells falling repeatedly into the same place is very remote. For temporary shelter against shells, buildings are covered in with strong balks laid close together and overlaid with fascines, on which some dung and finally earth is spread. The introduction of casemated batteries and forts, and of casemated defensive barracks, placed mostly along the inner slope of the rampart, at a short distance from it, has considerably increased the number of bomb-proof buildings in fortresses; and with the present mode of combining violent bombardments, continued night and day, with the regular attack of a fortress, the garrison cannot be expected to hold out unless effective shelter is provided in which those off duty can recover their strength by rest. This sort of buildings is therefore likely to be still more extensively applied in the construction of modern fortresses.

BOMB VESSEL, or **MORTAR BOAT**, is the expression in use for the more modern class of ships constructed to carry mortars. Up to the Russian war, those built for the British service drew 8 or 9 feet water, and carried, beside their 2 10-inch mortars, 4 68-pounders, and 6 18 lb. carronades. When the Russian war made naval warfare in shallow waters and intricate channels a necessity, and mortar boats were required on account of the strong sea-fronts of the Russian fortresses, which defied any direct attack by ships, a new class of bomb vessels had to be devised. The new boats thus built are about 60 feet long, with great breadth of beam, round bows like a Dutch galliot, flat bottoms, drawing 6 or 7 feet water, and propelled by steam. They carry 2 mortars, 10 or 12-inch calibre, and a few field-guns or carronades to repel boarding parties by grape, but no heavy guns. They were used with great effect at Sweaborg, which place they bombarded from a distance of 4,000 yards.

BOMBARDIER, originally the man having charge of a mortar in a mortar battery, but now retained in some armies to designate a non-commissioned rank in the artillery, somewhat below a sergeant. The bombardier generally has the pointing of the gun for his principal duty. In Austria, a bombardier corps is formed as a training school for non-commissioned officers of the artillery, an institution which has contributed much to the effective and scientific mode of serving their guns, for which that branch of the Austrian service is distinguished.

BOMBARDMENT, the act of throwing bombs or shells into a town or fortress for incendiary purposes. A bombardment is either desultory, when ships, field batteries, or a proportionally small number of siege batteries, throw shells into a place in order to intimidate the inhabitants and garrison into a hasty surrender, or for some other purpose; or it is regular, and then forms one of the methods of conducting the attack of a fortified place. The attack by regular bombardment was first introduced by the Prussians in their sieges in 1815, after Waterloo, of the fortresses in the north of France. The army and the Bonapartist party being then much dispirited, and the remainder of the inhabitants anxiously wishing for peace, it was thought that the formalities of the old methodical attack in this case might be dispensed with, and a short and heavy bombardment substituted, which would create fires and explosions of magazines, prevent every soul in the place from getting a night's rest, and thus in a short time compel a surrender, either by the moral pressure of the inhabitants on the commander, or by the actual amount of devastation caused, and by out-fatiguing the garrison. The regular attack by direct fire against the defences, though proceeded with, became secondary to vertical fire and shelling from heavy howitzers. In some cases a desultory bombardment was sufficient, in others a regular bombardment had to be resorted to; but in every in-

stance the plan was successful; and it is now a maxim in the theory of sieges, that to destroy the resources, and to render unsafe the interior of a fortress by vertical fire, is as important (if not more so) as the destruction of its outer defences by direct and ricochet firing. A bombardment will be most effective against a fortress of middling size, with numerous non-military inhabitants, the moral effect upon them being one of the means applied to force the commander into surrender. For the bombardment of a large fortress, an immense *matériel* is required. The best example of this is the siege of Sebastopol, in which quantities of shells formerly unheard of were used. The same war furnishes the most important example of a desultory bombardment, in the attack upon Sweaborg by the Anglo-French mortar boats, in which above 5,000 shells and the same number of solid shot were thrown into the place.

BOMBAST, in rhetoric, the statement of mean ideas by lofty words. It is an affectation of energy or inspiration, and is often produced when persons lacking sensibility attempt to describe the passions, or, lacking imagination, attempt to paint fictitious scenes.

BOMBAY (Port. *bomor boa bahia*, good harbor), a city and presidency of British India.—The city of Bombay is in lat. 18° 57' N., long. 72° 52' E., on an island of the same name, to which the adjacent island of Salsette is joined by a causeway. The island was conquered by the Mussulmans in the latter part of the 15th century, and ceded to the Portuguese in the early part of the 16th. In 1661 it came to the English crown as part of the dowry of Catharine of Braganza, wife of Charles II. In 1669 it was transferred by the king to the East India company, with all political powers necessary to its maintenance and defence. Bombay is the seat of government for the presidency, and a naval station. It is well fortified, has a convenient dock-yard, in which several ships of war have been built, and the finest harbor of western India. The population of Bombay island, including Colabba, according to the census of 1849, is 566,119, of which 5,088 are Europeans. The Parsees, the remnant of the ancient fire worshippers, form an important class of the population, not only by numbers, but also by their intellectual capacities, habits of business, and great wealth. They have the management of the dock-yards, which belong to the government. The most distinguished and public spirited of the many wealthy Parsee merchants of Bombay is Sir Jamsetjee Jejeebhoy. Bombay carries on an extensive trade with Europe, and with the coasts of western Asia. It is a depot for the merchandise and produce collected by native traders, and waiting transport to Europe, or other parts of Asia. Cotton is an important article of export from Bombay; in 1850 it exported 150,000,000 lbs. It is principally supplied from the provinces of Guzerat and the Concan, from Malabar, Cutch, and Sinde.

The produce exported to England is principally Persian raw silk, cotton, wool, spices, gums, and drugs. Bombay is connected with England by what is called the overland mail route, by way of Aden, the Red Sea, Suez, and Alexandria, completing in 85 days a transit which used to occupy 6 months. The first railway in the East Indies was opened April 6, 1858, from Bombay to Tanna, and telegraphic communications between Bombay and Calcutta in 1854. Bombay is the seat of an Anglican bishop, and of the supreme court for the presidency. Among the principal banks are the bank of Bombay, and the branch office of the Great Eastern bank of London. There is an Asiatic society, a medical, geographical, and agricultural society. The most important journals of Bombay are the "Bombay Times," "Bombay Courier," "Overland Bombay Times," and the "Indian News." Bombay is one of the most important Indian stations for American and British missionaries. The first British establishment within the limits of the presidency of Bombay was made at Surat, in 1601.—The presidency, which is subordinate to the authority of the governor-general of India, includes a territory on the continent north and south of the island of Bombay, from the mouth of the Indus to lat. 15° N., and comprises the following collectorates and population, according to the census of 1849:

	Area in sq. m.	Population.
Surat.....	1,329	492,634
Baroach.....	1,319	290,934
Ahmedabad.....	4,356	650,233
Kaira.....	1,869	580,631
Candesh.....	9,811	778,113
Tanna, or North Concan.....	5,477	815,849
Poonah.....	5,398	664,006
Ahmednuggur, including Nasauk.....	9,981	995,585
Sholapore.....	4,991	675,115
Belgaum.....	5,405	1,025,892
Darwar.....	3,887	754,385
Rutnagherry, or South Concan.....	3,894	665,338
Bombay Island, including Colabha.....	18	566,119
Colabha territory.....	818	53,731
Battarah.....	10,323	1,005,771
	67,945	10,091,806
Sinde:		
Shikarpoor.....	52,130	1,037,762
Hyderabad.....		
Kurrachee.....		
Native states within the Bombay ter-		
ritory.....	60,650	4,462,925
	180,715	15,573,992

The revenue of the presidency for the year 1851-'52 was, £2,738,962; disbursements, £3,209,538. For the same year the military disbursements were £1,683,828. The sources of revenue are the land tax, salt tax, the stipend from native princes, and duties on various other articles, among which is a heavy duty on opium. The government of the presidency is essentially the same as that of other parts of British India; the educational arrangements are of the same general character. Much has been done in this presidency in the way of internal improvements, roads, tanks, and irrigation. A survey of the land has also been made, the larger part of the cultivators being placed in direct relation with

the government.—On the outbreak of the Sepoy mutiny in 1857, the Bombay troops exhibited a fidelity which was frequently contrasted with the conduct of the native regiments in Bengal, but in time the spirit of revolt affected some of them also. A formidable rising at Colapoor was suppressed after 8 European officers had been murdered. Conspiracies were opportunely detected at Kurrachee, Shikarpoor, and Hyderabad in Sind, and even the city of Bombay was thrown into a panic by the discovery of a plot to massacre all its European inhabitants. The ringleaders were apprehended and 2 of them blown away from guns. The mutiny in this presidency, however, did not attain a serious magnitude.

BOMBAZINE (Gr. *βουβύς*, a silkworm), a fabric of which the warp is silk, and the weft worsted, manufactured originally in Lombardy, and chiefly for mourning apparel. It is now usually composed wholly of woollen, and is manufactured in France, England, Holland, and Germany. A large amount of capital is invested in its manufacture in Norwich, England.

BOMBELLI, RAFFAELLO, a Bolognese mathematician, of whom little else is known than that he lived in the 16th century, and in the year 1572 published a treatise on algebra, which has now become very scarce. He is the first who attempted the solution of the "irreducible case" in cubic equations. He gave the geometrical solution depending upon the trisection of an angle, which latter problem, he observed, could be reduced to a cubic equation. He was also the first to attempt the extraction of the cube root in the result of Cardan's formula. He states in the preface to his work that algebra was known to the Hindoos earlier than to the Arabs, an assertion which cannot be substantiated by any published books or manuscripts.

BOMBERG, DANIEL, a famous printer of Hebrew characters, born at Antwerp, in the Netherlands, died at Venice in 1549. He printed several editions of the Hebrew Bible, the first of which appeared at Venice, in 1518. The Talmud and many other Hebrew books issued from his press. His style of execution was so expensive that it ruined him.

BOMFIM, JOSÉ JOAQUIM, count, a Portuguese general, and leader of the constitutional party, born at Peniche, in Estremadura, March 5, 1790. After serving with distinction in the army, he began his political career in 1828, as an opponent of Don Miguel. He was one of the first to rally under the banner of Don Pedro on his arrival in Portugal, and supported Donna Maria in the civil war which followed her accession to the throne. He was minister of war and of the navy from 1837 to 1841. After the overthrow of the constitution he was defeated and captured by the duke of Saldanha, and banished to Africa. Recalled in 1847, he took part in the movement of 1848, which gave a momentary triumph to the republican party.

BOMMEL, CORNELIUS RICHARD ANTOINE VAN, bishop of Liège, born at Bois-le-Duc, April

5, 1790, died in Liège, April 7, 1852. He sprung from an influential and wealthy Roman Catholic family of Leyden, and was educated for the church. His exertions in behalf of education caused him to be appointed director of a seminary near Leyden, which appointment he retained until 1815, when the government closed all schools which had been established by the clergy. He now retired to private life, where, in anonymous publications, he vindicated the cause of free education against the government. Without any knowledge of the authorship of these publications, the government appointed Bommel bishop of Liège in 1829. On the outbreak of 1830 he espoused the Belgian cause, and, after the successful issue of the revolution, he retained his post, became the leader of the ultramontane party, opposed freemasonry, refused to transfer his episcopal see to Holland, favored the missions of the Jesuits, and caused the administration of Nothomb, in 1842, to adopt his theory of making the clergy the guardians of education, which, however, was discarded by subsequent administrations. He was a scholar of great erudition, and left several works, among which may be named, especially, "An Exposition of the True Principles of Public Instruction, in its connection with Religion," published in 1840.

BONA, a fortified town on the coast of Algeria, 265 miles E. of Algiers; pop. 10,000. It was the key of the province of Constantine; and, though unimportant in any other point of view, was early occupied by the French in their attack upon Algiers. It is rich in historical recollections; the ruins of the ancient Hippo-Regius, the Numidian capital, are still visible at about a mile distant. The place is not healthy from the neighborhood of the marshes formed by the river Seibons and two smaller affluents. It exports oil, wool, hides, and wax. About 500 vessels enter and clear the port annually. The town was rebuilt 1832, and is now one of the finest in Algeria, with a public garden, and schools for the French, Moorish, and Jewish population.

BONA, GIOVANNI, a Roman cardinal, born at Mondovì, Piedmont, Oct. 10, 1609, died in Rome, Oct. 27, 1674. He was renowned for his piety and learning, a collaborator in the *Acta Sanctorum*, the author of *Rerum Liturgicarum*, which is an authority on the service of mass, and of *De principis vita Christiana*—a book which has frequently been compared to the "Imitation of Jesus Christ," and of which French translations have appeared in 1693–1728. The last edition of his works is that of Turin 1747-'53, in 4 vols.

BONA DEA, the good goddess, a mysterious divinity of the Roman mythology, the wife or the daughter of Faunus. Her worship was secret, performed only by women; men were even required to ignore her name. Her sanctuary was in a cavern in the Aventinian hill, but her festival, which occurred May 1, was celebrated in a separate room in the dwelling of

the consul who then had the fasces. No man was allowed to be present, and all male statues in the house were covered. The wine used at this festival was called milk, and the vessel in which it was kept, *mellarium*. After the sacrifices, bacchanalian dances were performed. According to Juvenal, licentious abominations marked these festivals. The snake was the symbol of the goddess, and this would point to her being considered as possessing a curative, medical power, and in her sanctuary various herbs were offered for sale.

BONACCA. See BAY ISLANDS.

BONALD, LOUIS GABRIEL AMBROISE, vicomte de, an absolutist political philosopher, born of an ancient noble family at Le Monna, near Millau, department of Aveyron, Oct. 2, 1754, died there Nov. 23, 1840. When young he served in the *mousquetaires* under Louis XV.; resigning his charge at the beginning of the revolution, he became mayor of his commune, but on account of his ardent royalism he emigrated in 1791 and joined the royalist army under the Bourbon princes. Returning to France under Napoleon, he became, with Chateaubriand and Fiévée, editor of the *Mercur* newspaper, received a small office, but refused to become tutor to the sons of Louis, king of Holland. On the accession of Louis XVIII. he became a person of influence, was member of the chamber of deputies in 1815 and the succeeding years, always favoring an absolutist and reactionary policy; as one of the secretaries of state in 1828 he presided over the censorship of the press. At the revolution of 1830 he resigned his seat as a peer, and retired from public life. His literary labors were devoted exclusively to establishing the theory of power in society, of its origin and extent. He attempted to draw demonstrations from history, philosophy, and religion; and, in imitation of Vico, even from the philological meaning of words. He stoutly denied the validity of reason, and recognized absolutely that of authority. But above the highest civil authority, that of legitimate kings, he affirmed that of religion, or the church and its hierarchy. Authority from above forms the main principle in all his theories. It is in the word, the logos, the faculty of speech derived from above, that the whole power and manifestation of man, as a social and rational being, is to be sought. Bonald opposed every form of self-asserting reason, in philosophy as well as in social order and in politics, and was on this account considered by the absolutists as a firm and luminous defender of society. His complete works were published in 12 volumes, Paris, 1817-'19.—LOUIS JACQUES MAURICE, a French cardinal, third son of the preceding, born Oct. 30, 1787, at Millau. In 1817 he became curate and archdeacon of Chartres, bishop of Puy in 1823, archbishop of Lyons in 1839, and a cardinal in 1841. He is, beside, entitled to the appellation of primate of Gaul. During all his career he has evinced great zeal for the

freedom of the church, strongly opposing, on several occasions, the so-called encroachments of civil power, and remonstrating against the monopoly of public education by the university of France. He hailed the revolution of 1848 as a new era for the church, and the signal of its emancipation from the thralldom of the state. "You have often wished," he said in a circular directed to his diocesans, "to enjoy that liberty which makes our brothers in the United States so happy; now it will be yours. Henceforth France will have no occasion to envy North America on this point." He had some trouble with the agents of the republic, but with the government of Napoleon III. he has maintained a better understanding.

BONAPARTE, FAMILY OF. The extraordinary career of Napoleon has directed public curiosity to the origin of his family; but the servile adulation, which desired to endow him with an ancient and noble ancestry—as if his own abilities and performances were not his best claim to attention—has somewhat perverted the accuracy of the reports. One genealogical tree traces him to Emanuel II., a Greek emperor of the house of Comnenus, whose 2 sons, after the fall of Constantinople, fled, under the name of Bonaparte, to Italy. This is doubtful; and yet it is a historical fact that a Bonaparte family was distinguished among the nobles of Italy in the middle ages. In the "Golden Book of Bologna," the Bonapartes appear among the Florentine patricians, and their names are also inscribed in the "Golden Book of Venice," and in the nobility records of Treviso. When Napoleon married Maria Louisa, his father-in-law, the emperor of Austria, sent him some documents to show that his ancestors had been among the lords of Treviso. He is reputed to have said on the occasion, that "he dated his nobility from Millesimo and Monte Notte." When the Bonapartes went to Corsica is uncertain. Among the witnesses to a law document of 947 is one Messer Bonaparte, who is supposed to have belonged to a branch of the Tuscan Bonapartes. The latter were first settled at Florence, and afterward at San Miniato al Tedesco. A tomb in the church of San Spirito at Florence, belonging to the Bonapartes, has a coat of arms on it, which displays a star above and below the fesse of the escutcheon. Members of this family remained in San Miniato till 1799, when an old canon there, named Filippo Bonaparte, made the young hero his heir. There was a Nicolo Bonaparte, of Florence, who wrote a comedy named *La Vedova*, and likewise a Jacopo Bonaparte, who wrote a narrative of the sack of Rome under Charles V.—**CARLO MARIA**, Napoleon's father, was born in Ajaccio, March 29, 1746, at the time when the Corsicans were making their last desperate effort to shake off the Genoese yoke. He called himself a noble and patrician of Florence, had been educated as a lawyer at the university of Pisa, and was the most popular advocate of Corsica, when he attached himself to the cause of Paoli and his

country in the war against Genoa. In 1764 he fell in love with Letizia Ramolino, then in her 14th year, but as her parents were of the Genoese party, while he was a Paolist, they were not married till 2 or 3 years later. The submission of Corsica to France took place in 1769, a few months before Napoleon's birth, so that he was born a French subject. Had England interfered against this cession of Corsica to France, as a great many at the time fancied that she ought to have done, Corsica might probably have been English, and Napoleon an English subject! "How little," observes a historian, "could the duke of Choiseul suspect, while he was sending army after army to make sure the acquisition of Corsica to his Bourbon monarch, that a child was born the very year of the event, destined to usurp his throne, and drive out the princes of that family like outcasts and traitors." After the close of the Corsican war, Carlo Bonaparte wished to accompany Paoli into exile, but was prevented by the tears of his wife. He became, subsequently, assessor of the royal court of justice under the French rule. Count Marboeuf, the French commissioner, retained his name on the register of nobles, and also procured for his son Joseph a place at the school of Autun, and for Napoleon at Brienne. In 1779 he was the deputy of the Corsican nobility to Paris. He died Feb. 24, 1786, at Montpellier, where he was buried.—His wife, **LETIZIA**, born at Ajaccio, Aug. 24, 1750, bore him 8 children, Giuseppe or Joseph, Napoleone, Luciano, Luigi or Louis, Mariana, afterward Elisa, Carlotta, afterward Marie Pauline, Annunziata, afterward Caroline, and Girolamo or Jerome. When the English conquered Corsica in 1793, she fled with her mother, who had married a Captain Francis Fesch of Basel, and with her daughters, to Marseilles. On the elevation of Napoleon to the first consulship in 1799, she went to Paris; but it was not until the rise of her son to the imperial dignity that she was distinguished as Madame Mère. Napoleon appointed her general protectress of charitable institutions, in which capacity she maintained her own separate household, and was surrounded by the homage of friends and the affections of her children. She does not appear to have been elated by the dazzling success of her family, but retained the original simplicity of her character, often interposing to restore the harmony of her children when it was disturbed. After the reverses of Napoleon she went to live at Rome with her half brother, Cardinal Fesch. By the treaty of 1815 the whole family of Napoleon was banished from France, and by the ordinance of 1816 their property was confiscated. During the last years of her life she was blind and bedridden, and she died in 1886 in the 86th year of her age. *Las Cases* speaks of her as a person of remarkable energy and decision of character, as well as of great benevolence, but others have said that she was avaricious and obstinate.—**MARIA ANNA ELISA**,

eldest sister of the emperor Napoleon I.; born at Ajaccio, Jan. 3, 1777 (or, according to some biographers, in 1778 or 1774), died at the villa Vincentina, near Trieste, Aug. 7, 1820. She was educated in a convent at St. Cyr, lived with her mother in Marseilles at the breaking out of the revolution, married at Paris, in 1797, Felice Pascale Bacciochi, a Corsican noble, was made princess of Lucca and Piombino in 1805, and grand duchess of Tuscany in 1808. The vigor and state with which she ruled her principality gained her the appellation of the Semiramis of Lucca. She protected literature, science, and the industrial arts, and was especially the friend and patron of Châteaubriand and Fontanes. In 1814 she retired to Bologna; thence, the next year, to Austria, where she lived with her sister Caroline, the widow of Murat; thence, with her family, to her estate of Villa Vincentina, where, under the title of countess of Compignano, she passed the remainder of her life. She left 2 sons, Jerome Charles, who died in 1890, Napoleon Frederic, who died in Rome in 1838, and a daughter, Napoleone Elisa, who married Count Camerata, and whose only son, Napoleon, born 1827, who held an office in the public service, killed himself March 8, 1858.—**MARIA ANNUNZIATA CAROLINA**, youngest sister of the emperor Napoleon I., born at Ajaccio, March 26, 1782, died in Florence, May 18, 1839. She came to France in 1798, married Joachim Murat, Jan. 1800, became grand duchess of Berg in 1806, and queen of Naples in 1808. She gained the affection of the people, patronized letters, restored the Neapolitan museum of antiquities, organized the excavations at Pompeii, and established a school for 300 girls. Made a widow in 1815, she retired to Haimburg, in Austria, and took the title of countess of Lipona, the anagram of Napoli (Naples). She was permitted to visit Paris in 1830, where she resided 8 months, to obtain indemnity for the castle of Neuilly, which her husband had purchased, and which had been restored to the family of Orleans. The French chamber, in 1838, granted her a pension for life of 100,000 francs. She left 2 sons and 2 daughters.—**PAULINE**. See **BORGHESE**.

BONAPARTE, JEROME, the youngest brother of Napoleon, born at Ajaccio, Dec. 15, 1784, educated under Madame Campan at Paris, and next at Juilly, was early placed in the naval service, where he remained until in 1801 he was sent, as lieutenant, to St. Domingo, under Gen. Leclerc, his brother-in-law. Returning soon to France, as a bearer of despatches, he received an independent command, and sailed again for Martinique. During the hostilities of 1803 between France and England, he cruised between St. Pierre and Tobago, but for some reason or other he was obliged to leave the station and went to New York. Dec. 24, 1808, he married Miss Elizabeth Patterson, the daughter of a wealthy and eminent merchant of Baltimore. After the empire was declared he returned with his wife to Europe; but as his mar-

riage had not pleased the imperial will, she was not allowed to land in France. Napoleon had the marriage annulled by a decree of his council of state, but the pope, to whom politics were not in this case a superior consideration to morals, refused to sanction the divorce. Madame Bonaparte went first to Holland, where, too, she was not permitted to go on shore, and then to England. In that country she gave birth to a son, July, 1805, who was named Jerome Napoleon Bonaparte. The father himself entered France after a while, and was given a captaincy. Subsequently he was created rear-admiral, and in 1807 was transferred to the land service, with the rank of general of division. He commanded a body of Wurtembergers and Bavarians in the campaign of that year, and was successful in a movement against Silesia. Aug. 12, the same year, his brother caused him to be married to Frederica Catharine, daughter of the King of Wurtemberg, although his own wife was still living. On the 18th, Westphalia was erected into a kingdom, and the youthful, half-educated, and extravagant Jerome made the king. His government, however, though excessively lavish and prodigal, was an improvement upon that of the old *régime*: he was little more than the deputy or viceroy of the emperor; but that emperor was a greatly superior man to the conservative Germans, who before had held sway. In the campaign against Russia, in 1812, he led a corps of Germans, and considerably distinguished himself by his bravery; but having been guilty of some neglect, which disconcerted the plans of Napoleon, he was severely reprimanded by him, and went home in dudgeon. In the ensuing year, when the French were driven out of Germany, Jerome went with his family to Paris; but in 1814 they were compelled to quit France. His wife was arrested just as they were leaving Paris, by a body of the allies, but was speedily released. After Napoleon's abdication he lived alternately at Blois, at Gratz, and at Trieste, and did not get back to Paris till April, 1815. He at once embraced the fortunes of his brother, and fought with him at Ligny and Waterloo. The final downfall of the family sent him wandering through Switzerland, to settle at last near Vienna, as Prince de Montfort, a title conferred upon him by his father-in-law. In 1852, when Louis Napoleon assumed the supreme control in Paris, he was called back to France, made a marshal of the empire, president of the senate, and, in the failure of a direct succession to Louis Napoleon, heir to the throne. By his first wife, Miss Patterson, he had one son, who was lately a citizen of the United States, and by his second, two sons, Prince Napoleon, and one who is not now living, and a daughter.—**NAPOLEON JOSEPH CHARLES PAUL**, prince de Montfort, commonly called the Prince Napoleon, is the second son of Jerome, by his second wife. He was born in Trieste, Sept. 9, 1822, and was educated chiefly in Austria, but has travelled extensively, both in Europe and America. After the revolution of

Feb. 1848, he was elected in Corsica a member of the constituent and afterward of the legislative assembly, and began to figure as a leader of the democratic party, but he is now a supporter of the imperial policy. In 1849 he officiated for a short time as French ambassador at Madrid. When the Russian war was declared, he received a command, and served for a time in the Crimea, but did not particularly distinguish himself there. He was a member of the council of war which arranged the campaign of 1855, and was president of the commission during the great exposition of industry in 1855. In 1856 he went on an expedition to the Arctic ocean, and in 1857 paid a visit to the Prussian court.

BONAPARTE, JOSEPH, the eldest brother of Napoleon, born at Corte, in Corsica, Jan. 7, 1768, died at Florence, July 28, 1844. He was educated at the college of Autun, in France, and at the university of Pisa. Returning to Corsica, he studied law there, and in 1792 became a member of Paoli's administration. But when that patriot declared against the French convention, he removed, with his mother's family, to Marseilles. There he was married to the daughter of a wealthy banker, whose youngest daughter had also touched the heart of Napoleon, but was afterward married to Bernadotte, the king of Sweden. In 1797, Joseph was elected to the council of 500, from one of the departments of his native island. On repairing to Paris, however, he was sent by the directory as ambassador to the papal court, where the indiscreet zeal of certain Italian republicans soon involved him in difficulties with the government, and he demanded his passports. He resumed his seat in the council of 500, while Napoleon was absent in Egypt, and, in connection with his brother Lucien, prepared the way for the 18th Brumaire, which made Napoleon first consul. The success of the scheme created Joseph councillor of state, in which capacity he negotiated the treaty of peace and commerce with the United States in 1800. The following year his diplomatic skill was of service in concluding the treaty of Luneville with the emperor of Germany, and that of Amiens with England. When Napoleon assumed the imperial crown, Joseph became an imperial prince, and grand elector of the empire. In 1806, the emperor gave him the kingdom of Naples, which he hesitated at first to accept, but afterward took, acting as the mere *locum tenens* of his brother; he governed for 2 years, making various internal alterations, and striving to conciliate his subjects, in which policy he was incessantly overruled by his superior in France. In 1808, Napoleon wanting a king for Spain, ordered Joseph to take the place, which he did, but only to encounter still more trying difficulties than he had found in Naples. His own disposition was mild and compromising, and, if left to himself, he might have overcome the unbending pride and enmity of the Spanish people; but his remonstrances and suggestions

as well as his fraternal appeals, were met with equal disdain by his brother; and he was compelled to govern Spain as he had governed Naples, not in the interest of the nation, but according to the policy of the emperor. Three times, during his administration of 5 years, he was driven by hostile armies from his capital; and the last time, in 1813, never to return. In Jan. 1814, when Napoleon took command of the army, Joseph was appointed lieutenant-general of the empire, and the head of the council of regency. In this capacity, when the allied army invested Paris, in March, 1814, he authorized Marmont to treat for a suspension of arms, and subsequently consented to a capitulation. When his brother abdicated, he repaired to Switzerland, where he resided, busily engaged in political intrigues for the restoration of the emperor, until he joined Napoleon in Paris again, in 1815. During the Hundred Days he occupied a seat in the imperial senate; but on the second reverse of the emperor, he took solemn leave of him at the Ile d'Aix, and quit France and politics forever. Assuming the title of Count de Survilliers, he purchased a splendid country-seat at Bordentown, New Jersey, on the banks of the Delaware, and lived in opulent retirement, till 1830. The revolution of that year in France induced him to write to the chamber of deputies, in behalf of the claims of his nephew, Louis Napoleon, who is now the emperor; but as the letter was not read in the chamber, he repaired to England in person. He does not appear to have been able to effect any thing for his nephew, and after a brief sojourn in England, he removed to Florence in Italy, where he died. Joseph was a man of entirely different constitution from his brother; he was not made for camps or councils; his ambition was moderate, and his sentiments generally mild and amiable. In person he was graceful and elegant, and he was fond of books, of pictures, and of society. The correspondence between himself and his brother, which has been published since his death, is one of the most important contributions to history that has been made for a long while; for it reveals the confidential intercourse of the two brothers, and throws a great deal of light upon the details of important transactions. See *Mémoires et correspondance du roi Joseph* (Paris, 1855); a selection from the same (New York, 1856); *Précis historique des événements, qui ont conduit Joseph Napoléon sur le trône d'Espagne*, by Abel Hugo; *Storia d'Italia*, by Bottà; Thiers, *Le consulat et l'empire*, and Southey's "Peninsular War." —**ZENAÏDE CHARLOTTE JULIE**, a daughter of Joseph, born in Paris, July 8, 1804, married June 29, 1823, to Charles Lucien Jules Laurent Bonaparte, prince of Canino, residing principally at Rome, died in Naples, Aug. 8, 1854.

BONAPARTE, LOUIS, the fourth son of the Corsican family, and father of Napoleon III., was born at Ajaccio, Sept. 2, 1778, and died at Leghorn, July 25, 1846. He entered the army at an early age, and was with Napoleon in the

campaigns of Italy and of Egypt, distinguishing himself particularly at the bridge of Arcole. He was appointed by the first consul ambassador to St. Petersburg, but he did not go there in consequence of the death of the emperor Paul. In 1802 he married Hortense Beauharnais, the daughter of Josephine, but the union was not a pleasant one, inasmuch as her love did not go with her hand, and he was obstinate and eccentric. Napoleon, on becoming emperor, made him governor of Piedmont, and afterward, in 1806, when the republic of Holland was transmuted into a kingdom, king of Holland. He refused subsequently the crown of Spain, although his wife, instigated by the emperor, strenuously urged his acceptance of the dignity. From the beginning Napoleon and Louis were not cordially agreed, and this refusal aggravated their estrangement. Napoleon's idea always was, that the countries he conferred on his family should be governed in the interest of himself and of France, while his brothers were apt to feel that they ought to be governed with reference to the domestic policy of each nation. Louis, as a Holland magistrate, favored the trade with England, and encouraged the Dutch nobility, and when he commanded a contingent of his own troops on the continent, he did so as king of Holland, whereas Napoleon wished him to command as a mere French general. But this the stubborn temperament of Louis would not brook, and he was consequently often treated with studied contempt. When the splendid assembly of vassal princes was held in Paris in 1809, Louis was not invited to be present. At last their disagreements came to an open breach; his wife, who was devoted to the emperor, left him to reside in Paris, and Napoleon sent Oudinot with a large force to compel him to abdicate, which he did, in favor of his son; but the emperor refused to acknowledge the son, and in July, 1810, annexed Holland to the empire. Louis removed first to Töplitz in Bohemia, and then to Gratz in Styria, as the count St. Leu. In 1813 he offered his services to the emperor, who accepted them, but gave him no employment. When the Batavians, on the downfall of the empire, resumed their independence, he asserted his right to the throne, but they refused to listen to his pretensions. His wife, in the mean time, had obtained, through the interference of Alexander, a grant of the domain of St. Leu, with the title of duchess, and he opened a suit against her for the restitution of his two sons, who were in her keeping; but the return of Napoleon put a stop to the proceedings. Louis then retired to the papal states, where he devoted himself to literature, publishing *Marie, ou les Hollandaises*, 3 vols. (1814), a romance of Holland life; *Documents historiques et réflexions sur le gouvernement de la Hollande*, 3 vols. 8vo (London, 1821); *Mémoires sur la versification*, 2 vols. 8vo; a *Réponse à Sir Walter Scott*, and several poetical compositions. He died at Leghorn, but his

body was buried at St. Leu, in France. *Mémoires sur la cour de Louis Napoléon, et sur la Hollande* (Paris, 1828).

BONAPARTE, LUIGI, the third son of Charles and Letizia, born at Ajaccio in 1775, died at Viterbo, July 29, 1840. He removed to Marseilles in 1793. More than the rest of the family he adopted the revolutionary principles of that time. On the fall of Robespierre he was arrested as a Jacobin, but was not long afterward released. In 1796 he received the appointment of commissary of war, and in 1797 was elected deputy to the council of 500, in which he took the side of Siéyès, the amateur of new constitutions. On the return of Napoleon from Egypt in 1799, he took the most active part in overturning the directory, and at the famous sitting of the 18th Brumaire was instrumental in preventing the outlawry of his brother. He was one of the members who framed the new organ of government, and in 1800 he was sent ambassador to Spain, where he became a favorite of Charles IV. and Godoy, and secured the league of Spain with France in the attack upon Portugal. On his return to Paris in 1802, he became a member of the tribunate, where he eloquently supported the establishment of the legion of honor, and the concordat with the pope. He was also made senator. His first wife, who was the daughter of an innkeeper, having died, he married, in 1803, the widow of Joubert, a rich stockbroker. He assisted his brother in the project of making himself consul for life, but he refused to participate in his imperial designs, and in 1804 went to Italy. Fixing his residence near that of the pope, he lived in a style of great affluence, and gathered a brilliant society about him. When Napoleon repaired to Italy in 1807, he offered Lucien one of the crowns at his disposal, but as the condition of acceptance was unquestioning obedience to the emperor, he declined the offer. Napoleon was offended at this sign of contumacy, and told him to prepare to quit the continent; but he refused to do so, and purchased a new estate, called Canino, on the borders of Tuscany. Pius VII., who liked him, created him prince of Canino and Musignano in 1808; and in 1809, when the French entered Rome, he was compelled to retire to his estate, having expressed opinions hostile to the French proceedings. The next year he went on board of a vessel with a view of sailing to the United States, but he was seized by an English cruiser, and taken to Malta, whence he was transferred to England. Ludlow castle was assigned him as a residence during this kind of semi-imprisonment. He there wrote a poem, called *Charlemagne*, which was published after the peace of 1814, at Rome, whither he returned. On the escape of Napoleon from Elba, Lucien went to Paris to renew their friendship, and to intercede for the pope. He tried to take a seat in the house of peers as an imperial prince, but his pretensions in that respect were resisted,

inasmuch as he had never been accredited as such, and he only appeared as a common peer. When the emperor was defeated at Waterloo, he used his best exertions to recover his popularity in the chamber of deputies and among the people; he spoke, among other things, of the gratitude which France owed him; to which Lafayette, referring to the 8,000,000 Frenchmen sacrificed to his schemes of ambition, made a crushing reply. Lucien advised Napoleon to dissolve the chamber, but the latter, distrusting his hold upon the popular sentiment, refused to comply. On the occasion of the abdication, he shouted, "Long live the emperor," but failed in eliciting a response. He then returned to Italy, where he occupied himself in literary pursuits, and in gathering Etruscan remains. Some excavations on his estate in Viterbo supplied him with many curious monuments of that ancient and mysterious people, of which he gave an account in a work entitled, *Musæum Etrusque de Lucien Bonaparte, prince de Canino*. Not long afterward he revisited England, where he produced several books, among them a *Réponse aux Mémoires du général Lamarque* (London, 1835), in which he discloses the operations of himself and his brother during the Hundred Days; also, *Mémoires sur la vie politique et littéraire de Lucien Bonaparte, prince de Canino, rédigés par lui même*, 2 vols. (London, 1836), and *La Cynéide, ou la Corse saurée*, a poem in 12 cantos. He left his title to his eldest son, Charles Lucien Bonaparte, and divided his property among his 11 children.—PRINCESS CHRISTINE EGYPT, a daughter of Lucien by his first marriage with Christine Boyer, born 1800, whose first husband was the Swedish count Posse, afterward the wife of Lord Dudley Stuart, died in Rome, May 18, 1847.—CHARLES LUCIEN JULES LAURENCE, the eldest son of Lucien Bonaparte, prince of Canino, born in Paris, May 24, 1803, died there July 30, 1857. He was more distinguished for his scientific attainments than his political influence. The greater part of his life was steadily devoted to the cultivation of letters. For some years he resided in the United States, passing his time chiefly in ornithological studies, which led him to publish a splendid continuation of Wilson's "American Ornithology," in 4 folio volumes, beautifully illustrated. He was the author also of the *Iconografia della Fauna Italica*, in 8 vols., finely illustrated. As a member of nearly all the learned and scientific associations of Europe and America, he achieved a wide distinction, while he was the efficient promoter and active member of the several scientific congresses which have given impulse to the prosecution of natural history in Italy. His wife, to whom he was married in 1822, was the daughter of Joseph Bonaparte. During the revolution of 1848, he was one of the leaders of the republican party at Rome, and officiated in 1849, as member and vice-president of the constituent assembly.—LOUIS LUCIEN, the second son of Lucien, born in England, Jan. 4, 1813,

has also written much on scientific subjects, and is a chief promoter of the sciences in Italy. After the successful *coup d'état* of Louis Napoleon, he repaired to Paris and became a deputy to the legislative assembly, and afterward a senator. He has lately published a valuable work on the Basque language, which contains much useful and curious information.

BONAPARTE, NAPOLEON, born at Ajaccio, capital of the island of Corsica, Aug. 15, 1769, died at St. Helena, May 5, 1821. It is related that, his mother being taken in labor suddenly as she returned from mass, he was born on a piece of old tapestry, on which were figured the events of the Iliad. The name of the family, at that time, was usually written Buonaparte; although it is also found without the *u* in some documents of the time; but Napoleon, in after life, dropped the *u* altogether. He was baptized in 1771, and, according to the gossip, struggled violently against the sprinkling of the holy water by the priest. As a boy he manifested a violent and passionate temper, and in the little disputes with his elder brother Joseph, always came off master. The traditions report, also, that he delighted in running after the soldiers, who taught him military manoeuvres; that his favorite plaything was a small brass cannon, and that he regularly drilled the children of Ajaccio in battles with stones and wooden sabres. These military propensities, however, are common to nearly all children. His first teacher was his mother, who exerted a powerful influence upon his mind. He was next admitted to the royal college of Ajaccio, and spent a short time with his father on the continent, and with his brother Joseph at the college of Autun. In his 10th year, April 23, 1779, he was sent to the military school at Brienne, where Pichegru, afterward celebrated, was one of his instructors. His companions there regarded him as taciturn and morose; but as he was a Corsican, speaking very little French, and poor as well as proud, like those islanders generally, his conduct is doubtless to be ascribed as much to his circumstances as to his temperament. Toward those who showed him sympathy, like Bourrienne, he was susceptible of strong attachments. The annual report of the school for 1784 says of him: "Distinguished in mathematical studies, tolerably versed in history and geography, much behind in Latin and belles-lettres, and other accomplishments; of regular habits, studious, and well behaved, and enjoying excellent health." His favorite author was Plutarch, whose romantic biographies are so captivating to the imagination of youth. The stories of his assuming undue authority over his fellows are contradicted by Bourrienne in his *Mémoires*. In 1784 Napoleon repaired to the military school at Paris to complete his studies. He was shocked at the expensive style of living there, and wrote a letter against it to his late superior at Brienne, Father Berton. In Sept. 1785, he was commissioned a sub-lieutenant of artillery, and soon afterward was

promoted to be first lieutenant of artillery in the regiment of Grenoble, stationed at Valence. At Valence he wrote an essay for the prize offered by the Lyons academy, on the question, "What are the principles and the institutions necessary to make man happy?" and was successful. Talleyrand procured this essay when Napoleon was at the height of his power, and showing it to him, he cast it into the fire. With his friend De Manis he also made an excursion, during this time, to Mount Cenis, which he purposed to describe in the style of Sterne's "Sentimental Journey," then much in vogue; but he did not complete what he had designed. A pretty Mlle. Calombier of Valence, with whom he had stolen interviews, and "ate innocent cherries," was supposed to have inspired the sentimental part of this literary plan. A more suitable undertaking was the project of a history of Corsica, which he began, and communicated to Paoli, then living in exile in London. The parts of it still preserved are full of warm patriotic expressions, and vehement democratic thoughts. They were not phrases borrowed from the classic authors, but the spontaneous outbursts of a fresh young mind, stimulated by the spirit of his age, and not yet contaminated by the experiences of life, or fettered by its own schemes of aggrandizement. Napoleon visited Ajaccio every year, and interested himself in furthering the education, as well as the fortunes, of his brothers and sisters. He was not the oldest son, but he was instinctively recognized as the true head of the family, his father having died in 1785. His allowance in those days, probably furnished by his uncle, was 1,200 francs. Nothing could have been more decided than his democratic tendencies at this period. The great revolution of France was already moving powerfully onward, and he, in common with the other officers of the regiment at Valence, watched its complicated movements with deepening anxiety. Many of those officers openly took part with the royalists, while others, and among them Napoleon, inclined as strongly to the patriot side. On Feb. 6, 1792, he became a captain of artillery by seniority, and in the same year, being at Paris, he witnessed the insurrections of June 20 and of Aug. 10. Bourrienne relates that, on one of these occasions, when he saw the mob break into the palace, and force the king to appear at the window, with the *bonnet rouge* on his head, Bonaparte exclaimed: "It is all over with that poor man! A few discharges of grape would have sent all those despicable wretches flying." Paoli, having emerged from his retirement, had been enthusiastically received at Paris, and invested with the presidency and military command of his native island, where the ferment of revolution was also at its height. Ajaccio appears to have been for a while the headquarters of the patriots, the Bonaparte house their place of meeting, and Joseph and Napoleon (who had returned thither) the acknowledged

leaders. But Paoli's views of liberty were far more moderate than those of the national legislature, and in a little while he found himself in direct opposition to the government. The Bonapartes, strongly attached to him personally, did not follow him in this movement, as the inhabitants of Ajaccio did generally, but adhered to the cause of the convention. A civil war was the consequence of Paoli's defection; and in the course of it, Napoleon, who acted provisionally as the commander of a battalion of the national guard, had the unpleasant duty laid upon him of assaulting his native place. He succeeded against it at the outset; but the besieged party rallying, and his communication with the frigate which had set him ashore having been cut off, he was deprived of his temporary success, and in turn besieged in the tower of Capitelto. During this time he and his 50 men were reduced to the extremity of living for 8 days upon horse flesh, when some shepherds from the mountains released them from their situation. The exasperation of the adverse faction now drove the Bonapartes out of Ajaccio; Madame Letizia, frightened by the signs of imminent danger, fled with her children to Milili, and thence afterward, across the rugged mountain roads, to the sea-shore, where they concealed themselves in the thickets, until Napoleon succeeded in conveying them to Nice. From Nice they removed in 1798 to Marseilles. During their residence at Marseilles, Napoleon was employed by Gen. Dugear, who commanded the artillery of "the army of Italy," to negotiate with the insurgents of Marseilles and Avignon. In the latter place he published in the same year a little pamphlet called *Le souper de Beaucaire*, in which he endeavored to persuade the excited people of those parts not to provoke the vengeance of the revolutionists, who were then the ruling powers, and who were dealing a fearful retribution upon all whom they suspected to be the enemies of the country. Its sentiments were generally republican, and in favor of the convention, but not at all Jacobinical, as has been alleged. The pamphlet is given in Bourrienne, and translated in the appendix to Sir Walter Scott's "Bonaparte." But the provinces were not the sphere for Napoleon, and he repaired to Paris, where he spent a part of the summer of 1798. In September he was ordered on service at the siege of Toulon, then possessed by the Spanish and English, where he displayed such extraordinary military intelligence and activity as to lay the foundation of his whole subsequent military career. After reconnoitring Toulon for a month, he communicated to the council of war a plan of attack, which was adopted, and which he himself executed with brilliant success. The place was so important that the capture of it diffused a general joy over France, and gave to the young colonel of artillery, by whom the reduction had been chiefly accomplished, a distinguished name. In consequence of his services, he was recom-

mended by Gen. Dugommier for promotion, and, Feb. 6, 1794, was made a brigadier-general of artillery. He was then in his 25th year. Dugommier's letter to the committee of public safety, in regard to him, said sagaciously enough: "Reward this young man and promote him; for, should he be ungratefully treated, he will promote himself." Joining the army under Gen. Dumourbian, stationed at the foot of the Maritime Alps, he made the campaign of 1794 against the Piedmontese troops. On the downfall of Robespierre, July 27 and 28, 1794, he was suspected by the moderate party of too strong a sympathy with that leader, and, in spite of his disclaimers, was temporarily put under arrest. He wrote a sharp remonstrance against this proceeding, and was released by the committee of public safety, after a detention of about a fortnight. At the close of the campaign of 1794, he went to Paris again to solicit some new employment, but, in spite of his abilities, he did not procure it instantly. His letters to his brother Joseph, written during this time and recently published, have the tone and manner of those of a mere adventurer, somewhat depressed by ennui, and waiting impatiently upon fortune, though ready for any good luck that may turn up. "Life," he remarks, "is a flimsy dream, soon to be over," as if he was yet unsuspecting of what a disturbed and restless dream his was destined to be. He lodged in the *Rue du Mail*, near the *Place de la Victoire*, often complained of his poverty, and suggested schemes for raising money, and, at one time, thought of offering his services to the sultan of Turkey. But the constitution of the year III. organizing the directorial government having in the mean time been adopted (1795), and the Thermidorians of the convention which adopted it having passed 2 decrees declaring that the 2 new councils created by the constitution should be constituted $\frac{1}{2}$ of the present and $\frac{1}{2}$ of new members, and ordering the electoral bodies to designate the $\frac{1}{2}$ that were to be returned, a new germ of civil war was planted. The sections or primary assemblies of Paris resisted this dictatorial attempt to perpetuate its own power, on the part of the convention, and the convention prepared to put down the sections. The convention held at its disposal some 5,000 regular troops, beside a large number of cannon, under the general control of Barras, one of its members. Menou was at first chosen to lead these troops against the people, but through indecision or want of energy, failed in his movements. Barras, who had known Napoleon at Toulon, then said to the committee of the convention that the young Corsican, who was already employed by them in some slight military occupation, was the very person to take command. They accordingly gave it to him, and he, willing to fight for the people or against them, as best served his own designs or necessities, made his arrangements for the dis-

persion of the populace. On the morning of the 13th Vendémiaire (Oct. 5, 1795), the national guards, as the defenders of the sections were named, advanced to the number of 80,000 men, along the quays of the Seine, the street St. Honoré, and other approaches to the Tuileries. Everywhere as they advanced, however, they encountered a most formidable resistance. Napoleon, though he had had but one night to make his arrangements, left no point undefended, while he established bodies of troops in the best positions, and to a fire of musketry returned a murderous discharge of cannon. In less than an hour of actual fighting, he secured the victory to the convention. One of the letters addressed to Joseph by Napoleon, during the interval of his idleness, said, jokingly, "If I stay here it is possible I may be fool enough to marry," and fortune had already prepared his bride for him. Moving in the society of Barras, Tallien, Carnot, and their families, was a young widow named Josephine Beauharnais, a native of Martinique, and possessed of rare beauty and accomplishments. Bonaparte paid his addresses to her, and was soon an accepted lover. On Feb. 28, 1796, he was appointed, at the instance of Carnot, to the command of the army of Italy, which for 8 or 4 years had been carrying on an indecisive war against the Sardinians and Austrians, amid the defiles of the Alps and the Ligurian Apennines. His marriage took place the next month, March 9, and in less than a week afterward, he departed to assume his command. His army consisted of about 85,000 men, and was in a miserable state of destitution as to clothing and provisions, and considerably relaxed in discipline. The allied army opposed to him contained some 60,000 men, conducted by Beaulieu, an experienced and courageous general, and manœuvred according to the most skilful strategies of the time. But, in spite of the superiority of numbers and experience, Napoleon brought to the campaign several incontestable advantages: 1, the enthusiasm and alacrity of a young mind given for the first time a separate and independent field of glory, and determined on conquest or ruin; 2, an unrivalled power of combination, joined to a celerity of movement that seemed almost miraculous; and, lastly, the free use of such a stimulant to the hopes of impatient and desperate troops, half famished amid the barren Alpine rocks, as the promise of an unrestrained enjoyment of "the rich provinces and opulent towns" of Italy. Against France, at that time, a formidable coalition, consisting of England, Austria, Bavaria, Piedmont, Naples, and several minor states both of Germany and Italy, was arrayed; but Austria was the principal of the league, and the possession of Italy the key to the situation. Napoleon perceived this, and at once proceeded to make himself master of Italy. On April 11, he gained a victory at Monte Notte, on the 14th, that of Millesimo, on the 21st, that of Mondovi;

by which series of successes the king of Sardinia was compelled to sue for peace. Turning his attention next to upper Italy, he advanced upon Lodi, the capture of which, May 9, after a brilliant battle, put Lombardy in his power. May 15, he entered Milan, where heavy contributions were levied upon the state, and the principal works of art seized and sent to Paris. Naples, Modena, and Parma, hastened to conclude a peace; the pope was forced to sign an armistice; and Italy, from the Alps to the papal dominions, was in the possession of the French. Mantua was the next object of attack. Wurmser, at the head of large Austrian reinforcements, came through Tyrol to the defence; he was defeated at Castiglione Delle Stiviere, Aug. 5, and the larger part of his forces driven back. On Sept. 4, another division of the Austrians was repulsed at Roveredo. Wurmser, having rallied his scattered troops, in the mean time, was again attacked and routed at Bassano. A 3d Austrian army, under Marshal Alvinczy, now entered Italy, and for a part of the autumn held the French in check; but, on Nov. 15, a battle was joined at Arcole, which, after 8 days (15th-17th) of the hardest fighting that had yet occurred in the Italian campaign, gave the victory again to the French. Bonaparte then turned his attention to the settlement of the internal affairs of Italy, which was everywhere disturbed, and in many places in insurrection. A letter written to the directory, Dec. 28, 1796, reveals the principles upon which he acted in his various arrangements: "There are in Lombardy 3 parties: 1, that which is subservient to France and follows our directions; 2, that which aims at liberty and national government, and with some degree of impatience; and 3, that which is friendly to Austria and hostile to us. I support the first, restrain the second, and put down the third. As for the states south of the Po, there are also 3 parties: 1st, the friends of the old government; 2d, the partisans of a free aristocratical constitution; and 3d, the partisans of pure democracy. I put down the first; I support the second, because it is the party of the great proprietors, and of the clergy, who exercise the greatest influence over the masses of the people, whom it is our interest to win over to us; and I restrain the third, which is composed chiefly of young men, of writers, and of people who, as in France and everywhere else, love liberty merely for the sake of revolution." In the beginning of the year 1797, Austria again took the field with a formidable army, which Napoleon encountered, Jan. 14, at Rivoli, and defeated. Immediately afterward, Wurmser was besieged in Mantua, and compelled to surrender. On the same day, proclaiming the truce with the pope at an end, he entered the papal territories, and repulsed the papal troops on the Senio; took Faenza, and, in quick succession, Ancona, Loreto, and Tolentino; and, Feb. 19, forced the pope to conclude a peace. By this he was enabled to wage war upon Aus-

tria on her own soil. He crossed the Piave, and, March 18, forced the passage of the Tagliamento and the Isonzo; on the 19th he seized Gradiska, on the 20th Goritz, and on the 23d Trieste. Before April 1, the greater part of Carinthia, Carniola, and of the Tyrol, was reduced to subjection. On April 7, he granted the deputies of the archduke Charles an armistice of 5 days, and on the 18th of the same month concluded preliminaries of peace at Leoben, which laid the Austrians under pretty severe conditions, and assured the French possession of Trieste, whence they proceeded to assail Venice. On May 5, a declaration of war against that republic was published, on the ground of its having violated neutrality; and on May 12, the city was entered, the old constitution abolished, and a new constitution, somewhat less aristocratic, improvised. During the same month Genoa was revolutionized, and on June 6 received a new French constitution as the "Ligurian republic." On June 29, at Milan, the new Cisalpine republic was proclaimed, and speedily organized, and on July 14 the French army, retiring from the territories of the new republic, took up cantonments in the Venetian states. During the remainder of the summer and the autumn Napoleon was engaged in conferences and negotiations for a definitive treaty of peace with Austria, which was signed at Campo Formio, Oct. 17. By that celebrated arrangement Austria guaranteed Belgium and the Italian provinces to France, with the extension of its boundary to the left bank of the Rhine, while she received the Venetian provinces of Istria and Dalmatia, and the mainland of the republic as far as the Adige. Of the violence, the pillage, and the despotism which marked these Italian campaigns, it is for history to speak; but they did not prevent the popular French sentiment of the time from hailing Napoleon when he returned to Paris, Dec. 5, 1797, not merely as the conqueror, but as the liberator of Italy. In the short space of 2 years he had won a series of the most splendid victories on record, dictated forms of government to nearly the whole of Italy, humbled Austria, acquired large accessions of wealth and territory for France, and rendered the French arms formidable to the world. Under these circumstances, his journey from Italy to Paris was, of course, a triumphal procession; the enthusiasm of the Parisians was immense, and the festivals in his honor were endless; but Napoleon himself received his honors with becoming moderation, and was, in fact, sombre and thoughtful. Being a member of the institute, he assumed its dress, associated principally with men of science, and in all the congratulatory addresses of the period was extolled for his simplicity, his modesty, and his complete want of ambition.—The directory, then in power, had created an "army of England," with a view to hostilities against that country, and conferred the command of it on Bonaparte. He appeared to favor the movement, but at heart he disliked it, knowing how impracticable

an attempt to conquer the island would prove; and he sought to substitute for it a magnificent dream of his own, the conquest of Egypt and the East. At last the directory consented to it, and Napoleon made his preparations to embark at Toulon. By May 9, 1798, a great army had been collected, and the expedition set sail on the 19th. On June 9, it landed at Malta, and the next day took possession of the island, which was garrisoned by the French. Ten days after, the fleet renewed its journey, reaching Alexandria, July 1, when the French took the city, and having secured it, advanced toward the Nile. They crossed the desert, and reached the river, July 10. A flotilla ascended the stream, while the army marched along the shore. Arrived at Cairo, July 21, they encountered a large body of Mamelukes under Mourad Bey, which, after a most determined struggle, was repulsed. The battle was called the battle of the Pyramids, and the success of the French struck terror far into Africa and Asia. A great many of the surrounding tribes and nations submitted to the conqueror; yet fortune was preparing for him a terrible reverse. His ships, 13 in number, moored at Aboukir, under Admiral Brueys, were found by Nelson, the English admiral, who had long been in pursuit of them, and attacked on the evening of Aug. 1, with a degree of vigor and activity which was never surpassed in naval warfare. The whole squadron, with the exception of 4 vessels, which made their escape, was utterly destroyed. Out off from the means of return, the sultan issued a declaration of war against Napoleon, Sept. 10, for invading one of his provinces, incited an insurrection in Cairo, and prepared to send an army into Egypt. In Feb. 1799, Bonaparte crossed the desert with about 13,000 men, took El Arish and Gaza, stormed Jaffa, where a large number of Turkish prisoners were deliberately massacred, and advanced into Syria. On the 17th the French army reached Acre, commanded by a strong force of English, under Sir Sidney Smith, and 2 ships of the line. Repeated but ineffectual attempts to storm the place were made up to May 20, when Napoleon saw himself compelled to abandon the siege. The French army retreated to Cairo, which place they entered June 14. The Syrian campaign, which had lasted 8 months, cost the French 4,000 men, who were either killed or died of the plague. On July 25, they recovered the possession of Aboukir from the Turks, and then Napoleon returned privately to France. He endeavored to conceal the failure of his expedition under the glory of its immense scientific results, but he could not disguise from himself that his plan to molest the English supremacy in India, to colonize Egypt, to give France the command of the Mediterranean, and to build up for himself, perhaps, a vast oriental empire, had miscarried. He returned to France in time to take advantage of the political intrigues then rife, and by means of the events of the 18th Brumaire (Nov.

9, 1799), to get himself chosen the first consul of the republic (Dec. 13).—From this time his line of policy unfolded itself more distinctly; to establish order at home, and to humiliate the enemies of the nation, were the honorable objects of it; but the extension of his own power was unfortunately an end scarcely less conspicuous. Nothing could have been more needed than a reformation of the administrative departments; the finances were deranged, the treasury empty, the taxes increasing, and trade at a stand-still. In the same summary manner in which he ordered his troops, but with remarkable sagacity, and still more remarkable courage and activity, Napoleon undertook to reform civil affairs. At the same time, Austria, England, and the Porte, if not carrying on active hostilities against France, refused all terms of peace, while a civil war was raging in La Vendée. Suppressing the latter by a series of decided but conciliatory measures, he turned his whole attention to the continental war. An army was concentrated near the banks of Lake Geneva in Switzerland, with which he passed the Great St. Bernard May 14–20, 1800, and entered Milan, June 2. On the 14th of the same month, after several unimportant skirmishes, he met the Austrians at the village of Marengo, where he achieved another brilliant victory. Having established provisional governments at Milan, Turin, and Genoa, he returned to Paris, July 8. As his general, Moreau, had also defeated the archduke John in the great battle of Hohenlinden, Dec. 8, 1800, Austria was obliged to make a separate peace. The preliminary treaty of Luneville, dated Feb. 9, 1801, made a new arrangement of the states of the continent, and although it was essentially the same as that of the treaty of Campo Formio, it contained provisions which laid the foundation of much subsequent trouble. Pursuant to the same objects, a treaty was concluded with Spain, March 21, 1801; with Naples, March 18; with the pope, July 15; with Bavaria, Aug. 24; with Portugal, Sept. 29; with Russia, Oct. 4; with Turkey, the 9th; with Algiers, Dec. 17; and the treaty of Amiens with England, March 25, 1802. Thus it seemed as if a universal cessation of hostilities was about to mark the history of Europe. To the title of conqueror, the first consul now added that of pacificator. But his attempt to crush an insurrection of the blacks in St. Domingo, for which an expedition had been sent out Nov. 1, 1801, under his brother-in-law Gen. Leclerc, is not to be regarded as one of the grounds of this latter title. The greater part of the army, some 20,000 in number, was swept away by fever and the sword; the blacks were instigated by brutal cruelties to still more brutal massacres, in which some 60,000 whites perished; and the island was desolated by the fiercest exhibitions of alternate terror and revenge. It was by the direct act of Napoleon that slavery was established in Guadeloupe, and the slave trade again opened.

Toussaint Louverture, an able and courageous negro, who had made himself the leader of his struggling countrymen, was seized during a truce, and carried to France, where he died in prison. Napoleon availed himself of this interval to perfect the administration of the interior affairs of his country. A general amnesty allowed all the French emigrants to return home; a new order of knighthood known as the legion of honor was established, and the constitution of the Cisalpine republic was perfected. On Aug. 3, 1802, Bonaparte was proclaimed consul for life by a decree of the senate, which was confirmed by a popular sanction of some 8,000,000 votes. A *senatus consultum*, issued a few days after, reconstructing the electoral bodies and reducing the tribunate to 50 members, indicated, however, that he was not yet satisfied with the dignity to which he had been raised. Many persons saw in the movement a cautious step toward a still more absolute power.—It is to this period that the greatest of Napoleon's services to France belongs. The civil code, which has ever since been the law of the nation, was then digested and arranged by a commission of eminent lawyers and civilians, under the presidency of Cambacérès. The various branches of public instruction also attracted his attention; and the lyceum, the college of France, the polytechnic and other military schools, were organized on the most liberal scale. But his scheme which reduced the provincial administration of France to one uniform plan, having its head at Paris, and virtually abrogating the old commercial liberty and independence, was a more questionable reform. Nor were his efforts to restore the religious harmony of France, by renewing the ancient privileges of the Catholic priests, as happily conceived as many of his political improvements. In fact, like all organizers and reformers, Napoleon undertook too much, and in the exaggeration of his own powers, fell into many mistakes. The recovery of a diseased and distracted nation is not to be accomplished at once, and by a few strokes of the pen. Yet, in considering the epoch of the consulate, it is impossible not to derive from it a high admiration of the scope and versatility of Napoleon's talent, and a general sympathy with his public aims. But already his head was giddy with success, and in the midst of the great labors of 1802, he thought secretly of the imperial diadem. Disturbances in Switzerland in the beginning of 1802, caused Napoleon to resort to an armed mediation in its affairs; in August of the same year, the island of Elba was united to France; on Sept. 11, the incorporation of Piedmont took place, and in October that of the duchy of Parma. England professed to see, in these events, an infringement of the treaty of Amiens; and, in a short time, there was an open resumption of hostilities. On March 21, 1803, a *senatus consultum* placed 120,000 conscripts at Napoleon's command, while England made no less active preparations. On May 18,

England declared war against France, and laid an embargo upon all French vessels in her ports. France retaliated by a decree that all Englishmen, of whatever condition, found on her territory, should be detained as prisoners of war; and Gen. Mortier was sent to occupy the electorate of Hanover, as belonging to Great Britain. In the mean time, the police of Paris professed to have discovered a conspiracy against the life of the first consul, in which Pichegru, returned from exile at Guiana, Georges Cadoudal, a Chouan chief, and Gen. Moreau, were said to be concerned. These were arrested, and suspicions of complicity attaching to the duke d'Enghien, son of the duke of Bourbon and grandson of the prince de Condé, the neutral territory of the grand duchy of Baden was invaded in order to effect his seizure. He was taken during the night of March 15, 1804, conveyed to the citadel of Strasbourg, and thence, under escort, to the castle of Vincennes. A military court, consisting of 7, was hastily summoned there by the first consul, by which he was tried and found guilty of the charges of bearing arms against France, of offering his services to England, of conspiring with emigrants on the frontiers, and being an accomplice of the Paris conspirators. He was sentenced to death and executed immediately after the expiration of the same night, between 4 and 5 A. M. of March 21. On April 6, Pichegru was found dead in his prison. At a later period Georges Cadoudal and others were executed, while some of their confederates were reprieved, and Moreau was banished. In the midst of these sinister events, a motion was made in the tribunate by one Cuvée, that Napoleon be made emperor of the French, with a right of succession to his family. Carnot spoke against the motion with much patriotic fervor, but it was carried by a large majority, May 8, 1804. On submission of the question to the votes of the people, an apparent popular sanction was given to the deed, and on May 18, Napoleon assumed the imperial title. He requested the pope to perform the ceremony of his coronation. Pius VII., after consulting with his cardinals, came to Paris for that purpose, in November. On Dec. 2, the "soldier of fortune," as he had been sometimes called, was consecrated at the altar of Notre Dame, "the high and mighty Napoleon I., emperor of the French." Being emperor, he proceeded to surround himself with all the splendors and gauds which, in the puerile fancy of the old nations, are supposed to be essential to the dignity. He created a new nobility with sounding titles; he opened a brilliant court; he established the ridiculous etiquette of royalty; and in a thousand other ways sought to dazzle weak minds by ostentation and parade. He who had proved himself the first military genius of modern times, who by his abilities had raised himself to the highest post of a great nation—who wielded more actual power than any potentate of Europe—who had inspired the labors of the civil code—was yet

weak enough to conceive that a grand title would add to his distinction, and the affectation of a royal dignity and magnificence extend his acceptance among the people. A mingled ambition, pride, and pique against the pretensions of the royal races seem to have blinded the eye else so firm and penetrating, and to have misled the judgment else so cool and sagacious, into a career of egotism and folly. For the illusion which led to the assumption of the crown soon precipitated Europe into a war which deluged the continent in blood, and almost annihilated France.—The changes which had taken place in France, rendered changes in the Italian governments necessary, and from republics they were transformed into a kingdom. Napoleon went to Milan, in Italy, where, May 26, 1805, he was formally anointed king, in the midst of imposing ceremonies and theatrical pomp. The same summer, the northern powers listened to the solicitations of England, and united in a coalition against the new emperor. Russia, Austria, and Sweden joined in the charges of territorial usurpation which were levelled at Napoleon, but Prussia, already bribed by him with the promise of Hanover, could not be seduced into becoming a party. By September, the French forces in 8 divisions, and numbering 180,000 men, were upon the Rhine, ready to act against Austria. Unfortunately that country, governed by decrepit bureaucrats, sent forward its troops under an incompetent general, Mack, without waiting for the Russian allies. On Oct. 20, he was completely surrounded by Napoleon at Ulm, and compelled to surrender his whole army of 23,000 men. The next day, however, the immortal victory of Nelson, at Trafalgar, over the combined fleets of France and Spain, compensated the allies for this temporary reverse. Nothing daunted by the naval disaster, Napoleon advanced to Vienna, which city he entered Nov. 18, where he made his preparations to meet the combined armies of Russia and Austria, then concentrating on the plains of Olmütz. On Dec. 2, 1805, the grand encounter came on, at Austerlitz, and after a struggle of unexampled energy—in which three of the greatest armies of Europe, each commanded by an emperor, with the mastery of the continent for the prize, met in desperate strife. Napoleon won the victory, the most glorious, perhaps, of his career. The allies were thoroughly routed; the emperor of Austria made instant peace, while the emperor of Russia withdrew into his own territories. The king of Prussia was rewarded for his neutrality in the possession of Hanover, and England alone remained to stem the tide of success, which was bearing forward the victorious Corsican. As the king of Naples, instigated by his wife, an Austrian princess, had received the troops of Russia and England into his dominions, during the recent war, Napoleon construed the act into one of predetermined hostility, and in Feb. of 1806 sent an army thither to enforce redress. The king fled to Sicily, when Napoleon declared

the crown vacant, and conferred the title of king of Naples and Sicily upon his brother Joseph, June 6. Following this by another decree, he transformed the Batavian republic into a kingdom, dependent upon France, and gave the crown to his brother Louis. About the same time, he erected various districts in Germany and Italy into dukedoms, which he bestowed upon his principal marshals. But a more important movement was that of July 12, which created the confederation of the Rhine, and which some 14 princes in the south and west of Germany were induced to join, thereby placing themselves under the supremacy of France, and detaching some 16,000,000 people from the Germanic dominion of Austria. The policy which Napoleon had pursued in making his brothers kings, he now extended to his sisters, who were made imperial princesses, and they and their husbands distributed as rulers over various nations of the continent. Elisa, his eldest sister, married to Gen. Bacciochi, received the principality of Piombino, for herself and her male descendants, but with the condition that the hereditary prince should not ascend the throne until he had received the investiture from France. Feudalism, in its most decrepit and despicable form, was revived by this "child of the revolution." William Pitt, the minister of Great Britain, having died Jan. 23, 1806, and Charles Fox succeeding to his place, negotiations were opened between France and England, in regard to the termination of hostilities. In the course of these, propositions were entertained, looking toward a restoration of Hanover to the latter power, which at once opened the eyes and aroused the jealousies of Prussia. It was not long before the Prussian monarch acceded to the coalition against Napoleon, and entered into active preparations for war. The emperor, whose celerity of action was proverbial, instantaneously moved toward Prussia with a powerful force, and by Oct. 8, 1806, had reached the Prussian outposts. On the 14th he routed the enemy with fearful slaughter at Jena, and the same day Marshal Davoust achieved the most important successes at Auerstädt, slaying, among others, the duke of Brunswick. By this double encounter, in which more than 20,000 Prussians were killed, the strength of the monarchy was fatally broken, and Napoleon followed up his victories with such signal energy, that, in 2 weeks from the commencement of hostilities, Oct. 25, he entered the Prussian capital in triumph. After occupying all the fortresses, and reducing such towns as were disposed to maintain a show of resistance, he issued from Berlin, Nov. 21, the famous decree, declaring the British islands in a state of blockade, forbidding all correspondence or trade with England, defining all articles of English manufacture or produce as contraband, and the property of all British subjects as lawful prize of war. Meanwhile, the Russian allies, who had advanced as far as the Vistula, were driven back through Poland, and the French entered War-

saw. A winter campaign was then begun against the Russians; but after the indecisive battle at Pultusk, Dec. 26, the Russians retreated to Ostrolenka, and the French behind the Vistula, toward the north. The month of Jan. 1807, was spent in repose and preparation by both sides, but on Feb. 8, the two armies met at Eylau, where a desperate engagement took place, in which a loss of 50,000 men was divided between them, and both claimed the victory. The following May, Napoleon attacked and conquered the important fortress of Dantzic, and having reinforced his army with 200,000 men, he once more advanced against the Russians. On June 14, the battle of Friedland was fought, and the Russians were so worsted that Alexander claimed an armistice. The two emperors met for the first time, June 25, on a raft in the middle of the Niemen, and on July 7 a treaty of peace was concluded at Tilsit. The Prussian monarch received back about half of his dominions. The duchy of Warsaw was given to the elector of Saxony, an ally of the French, who was made a king, while the principal Prussian fortresses and seaport towns remained in the possession of the French till a more general peace should be concluded. Russia obtained a part of Prussian Poland, and, by secret articles, was allowed to take Finland from Sweden. Out of the Prussian territory on the left bank of the Elbe, Hesse Cassel, Hanover, and Brunswick, the new kingdom of Westphalia was formed, and bestowed upon Jerome, the brother of Napoleon. Soon after the treaty of Tilsit, England, conceiving that Napoleon, with the connivance of Russia, was about to make arrangements with Denmark and Portugal for the conversion of their fleets to his purposes, which would expose her to the assaults of the combined navies of Europe, sent a powerful squadron to bombard Copenhagen. Denmark, upon the surrender of that place, threw herself openly into the hands of France. As to Portugal, however, having refused to enforce the Berlin decrees against England, and despatched her fleet to Brazil, at the instigation of England, and to avoid lending aid to France, Napoleon declared that the house of Braganza had ceased to reign, and sent Junot to occupy Lisbon. Nov. 27, 1807, the prince regent, the queen, and the court of Portugal embarked for a foreign port, and on the 30th the French entered their capital. In December of the same year Napoleon became involved in a serious controversy with the pope, which led to the annexation of the marches of the Adriatic provinces to his kingdom of Italy, and to the military occupation of Rome. At the same time Napoleon found a pretence for interfering in the affairs of Spain. A series of corrupt intrigues, in which the king, Charles IV., his queen, the favorite Godoy, and the pretender to the throne, Ferdinand, son of Charles, were engaged, had involved the internal administration of Spain in inextricable confusion. Napoleon cut the Gordian knot with his sword. Madrid was occupied by Murat, March 23, 1808, and the

emperor proclaimed his brother Joseph king of Spain, June 6. The Neapolitan kingdom, which Joseph was thus obliged to vacate, he transferred to his brother-in-law Murat. Many of the Spanish nobility acquiesced in this summary disposal of the sovereignty of the nation, but the great body of the people rose in arms against it. Ferdinand, although a prisoner in France, was declared by them the legitimate monarch, while England sent immense supplies to sustain the population, and Napoleon prepared to enforce his policy. A war which lasted 7 years was thus begun in the peninsula. At the outset the Spaniards were successful. On June 14 a French squadron was captured by the English fleet, in the bay of Cadiz; on the 28th Marshal Moncey was repulsed in an attack upon Valencia; for 6 weeks Palafox made a heroic defence of Saragossa; July 20, the new king made his triumphal entry into Madrid; on the 22d, Gen. Dupont, with 18,000 men, surrendered to the Spaniards at Baylen; and on Aug. 2, Joseph, with all his remaining forces, commenced a retreat beyond the Ebro; Aug. 21, Marshal Junot was defeated at Vimieiro by Sir Arthur Wellesley, and this battle led to the convention of Cintra, under which Portugal was evacuated by the French forces. Napoleon therefore deemed it necessary to take the field in person, and, in the early part of November, appeared in the north of Spain with 180,000 men. The Spaniards were rapidly defeated at Reynosa, Burgos, and Tudela, and on Dec. 4 he entered Madrid. The British troops, hastening to the assistance of the Spaniards, were pursued to and ineffectually attacked at Corunna, but their leader, the gallant Sir John Moore, was fatally wounded. The presence of Napoleon seemed to have redeemed nearly every reverse. But, in Jan. 1809, he was compelled to return to Paris to counteract the movements of Austria, which, taking advantage of the peninsular war, had sent forward large bodies of troops into the Tyrol and Italy. On April 17 he assumed the command of his army, and before the close of the 22d he had completely routed the Austrian forces. On that day, at Eckmühl, he defeated the archduke Charles; on May 18 he again entered Vienna; on the 21st and 22d he was worsted at Aspern and Essling, but on July 6 he more than recovered all his losses, and gained a stupendous victory at Wagram, which enabled him to dictate once more his own terms of peace. During these troubles the Tyrolese seized the opportunity to raise the standard of insurrection; the British made a descent upon the coast of Holland; Sir Arthur Wellesley was carrying on a most effective war in Spain, and the difficulties with the pope were renewed; yet Napoleon contrived to make face against all these assaults. By a decree of May 17 the papal states were annexed to the French empire, which was followed by a bull of excommunication against the emperor, when the pope himself was arrested and conveyed to Paris, where he remained a virtual prisoner till 1814.

Yet in the midst of his triumphs, an attempt upon his life was made, Oct. 18, by the young German enthusiast, Staps, from which he had but a narrow escape. To crown the events of the year, it was announced in December that Napoleon was about to repudiate his wife Josephine, in order to contract an alliance with some of the dynastic families, and thus procure to himself a successor of royal blood. On the 16th of that month an act, formally divorcing him, was passed by the obedient commissioners of the senate, and on April 2, 1810, the emperor was married to the arch-duchess Maria Louisa, a daughter of the proud and ancient house of Hapsburg. Josephine retired with a broken heart to Malmaison, and the new empress took the place of the affectionate and devoted companion of his early years. From this union there was born a son on March 20, 1811, who was proclaimed, in his cradle, the king of Rome. The French empire had now reached its greatest extent and its highest glory. In addition to the 86 departments of France proper, it embraced 8 departments along the Alps, 15 beyond the Rhine, 15 beyond the Alps, in upper and central Italy, and 7 Illyrian provinces, beside exercising control in Spain, in the Italian kingdom, in Switzerland, and in the confederation of the Rhine. The French codes and French ideas were predominant at Warsaw, at Milan, at Naples, in Holland, Westphalia, and Bavaria. To Sweden a king was given in the person of Marshal Bernadotte. Holland was annexed to France by decree of the senate, July 9, 1810. But in the Spanish peninsula the progress of the French was slow. Sir Arthur Wellesley, who had recently been made Lord Wellington, exhibited a degree of military skill and activity which easily held the marshals of Napoleon in check, and began to call for the presence of the grand master of war himself. On July 10, 1810, the fortress of Ciudad Rodrigo capitulated to Ney, and in the following December Massena was defeated by Wellington at the heights of Busaco. Nov. 14, Massena was driven from before the fortified lines of Torres Vedras. In the early part of 1811 Soult besieged Badajoz, and captured it on March 10, but on May 16 he was routed at Albuera. Thus a series of alternate successes and reverses marked the campaign throughout the year. The surrender of Valencia to Suchet, Jan. 9, 1812, was, however, the last of the French triumphs. Ten days afterward, Wellington recaptured Ciudad Rodrigo; April 6, he recaptured Badajoz; July 22, he worsted Marmont at Salamanca; and the next day the capital of Spain was in possession of the victorious English captain. But not until the battle of Vittoria, June 21, 1813, were the French driven entirely beyond the Pyrenees. Napoleon was personally occupied at the time with a greater enterprise than that of the reduction of Spain. His good understanding with Russia was not destined to endure. Alexander complained of his encroachments upon the interests of Russia, especially

upon her commerce in the northern seas, and the commencement of the year 1812 saw both emperors engaged in formidable preparations for war. The scheme of a universal monarchy, which dazzled the ambition of Napoleon, seems to have blinded him to the consequences of his acts, or to have allured him to conquest with utter indifference to other results. A "grand army," of more than 500,000 men, was gathered on the frontiers of Poland to enter upon the Russian campaign—one of the most stupendous as it was one of the most disastrous events in the records of history. Three hundred thousand Russians assembled on the banks of the Niemen to oppose the mighty force of the French. June 24, 1812, Napoleon crossed the river, and the Russians retired step by step before the invaders. Tempests, rains, and famine scourged the camps of the French, and yet they pushed forward. Under the walls of Smolensk, on the evening of Aug. 16, a division of the Russians ventured to make a stand against an advanced division of the French, and before the morning of the 18th the entire city was a heap of smoking ruins. Both the main armies drove rapidly on toward the city of Moscow. Sept. 6, at the small village of Borodino, they halted, and came face to face with each other, resolved to risk a trial of strength. As the morning of the 7th dawned, a solitary gun announced the beginning of the fight; immediately 1,000 cannons belched forth their fire of death; more than 250,000 men were enveloped in the dense smoke of the conflict; and when the night fell more than 90,000 of killed and wounded heaped the field. (See BORODINO.) On the following day the Russians retired into Moscow, only to prepare the inhabitants to withdraw in a body before the irresistible arms of France. On the 15th, when Napoleon rode into the ancient capital, it was as silent as the desert, and he took up his residence in the Kremlin as if he were about to sleep in a tomb. But suddenly, at midnight, a hundred glares of light showed that the people had not yet all deserted. The vast city was in flames in every direction, and the baffled French, enveloped in fire, were compelled to seek refuge in the desolate surrounding country. Napoleon lingered over the splendid ruins until Oct. 19, when all his proposals for a peaceful adjustment of difficulties being rejected, he was reluctantly compelled to order a retreat. At first the weather was fine, and only moderately cold; but soon the snow, the rain, fatigue, and swarms of harassing Cossacks threw the dispirited Frenchmen into disorder. Then commenced that terrible retreat of 120,000 men, which for various suffering and horror has no parallel in the annals of our race. Napoleon himself returned immediately to France, and was almost the first to announce his disaster in his own capital, so rapidly had he fled from the scene. The loss of the French and their auxiliaries, in this campaign, was 125,000 slain, 132,000 dead of fatigue, hunger, disease, and cold, and 193,000 made prisoners. Yet the author of this

fearful waste of human life had scarcely reached Paris when he issued orders for new conscriptions, and still thought of prosecuting the war! This dreadful reverse encouraged the European powers to a 8th coalition, composed of Russia, England, Sweden, Prussia, and Spain, which, early in the year 1813, sent forward its forces toward the Elbe, with a view to hem in the indomitable general, who seemed to set every misfortune at defiance. With an army of 350,000 men Napoleon repaired to Germany, where he fought and won the battle of Lützen on May 2, and the battle of Bautzen on the 21st and 22d, but neither of them with decisive results. On June 4 an armistice was agreed upon, when Napoleon repaired to Dresden, where Metternich, on the part of Austria, offered a mediation with a view to closing the war. But Napoleon could not agree to the terms which were proposed to him, fixing the limit of the French empire at the Rhine, and hostilities recommenced. From Aug. 24 to 27, a battle raged around the city of Dresden, with the preponderance of success on the side of the French; but, owing to the want of cavalry, Napoleon was unable to derive from it all the advantages for which he looked. The greater part of the month of September was passed in a desultory warfare, the French armies, on the whole, losing ground, and experiencing constant desertions on the part of their German allies. It was no longer the dynasts who were opposing Napoleon, but the people, and the prestige of popular sympathy, which had carried him along, even in the midst of nominal enemies, was beginning to fail. Among the Teutonic masses the thought had spread that the war before them was a *Freiheitskrieg*—a war of independence; and the victor, hitherto invincible, was at last brought to face, not the representatives of dilapidated monarchies, but a nation in its moral might and dignity. (For a more detailed history of the great campaign of 1813-'14 see BLÜCHER.) On Oct. 16 the battle opened at Leipsic, and a gallant struggle on the part of the French showed that their energies were still fresh, and the genius of their leader unimpaired. The 17th was a day of anxious suspense and rapid preparation. On the 18th the carnage was renewed, and Napoleon discovered that it would be necessary to retire beyond the Rhine. The morning of the 19th saw the dejected lines of the French slowly filing out of the city, when the allies forced their way into the town, and by blowing up a bridge committed a sad havoc, and made some 25,000 prisoners. Thus, after an obstinate resistance of 3 days, Napoleon was compelled to retreat—a movement for which, prodigious as his genius was in assault and defence, he seemed to have but little capacity. As at Moscow, and later at Waterloo, his backward march was worse than a battle lost. Though he out his way bravely through the Bavarians, his late friends, at Hanau, yet, when he crossed the Rhine, but 80,000 remained of all his splendid

army. He reached Paris Nov. 9, to encounter a strong feeling of dissatisfaction on the part of his own countrymen. The legislative body expressed a desire for peace, and could only be answered by a guard of soldiers. Yet the devoted France, in the midst of her humiliations, was not unwilling to allow her hero another chance. With a fertility of resource and a genius for combination which were almost miraculous, Napoleon was prepared, by the end of Jan. 1814, to enter upon another campaign, which is called the campaign of France. Prussia, Russia, and Austria were already on her eastern borders; Wellington had crossed the Pyrénées, and had laid siege to Bayonne; Bernadotte, the king of Sweden and late companion of the emperor, was coming down from the north at the head of 100,000 troops; and Murat, his own brother-in-law, had entered into a secret treaty with Austria for the expulsion of the French from Italy. Thus, surrounded on all sides by enemies, with his disposable force shattered and broken, the indomitable emperor still repulsed their attacks, and still continued to astonish Europe with his dazzling victories. But numbers, as well as moral power, were now against him; the allies succeeded in reaching the exterior defences of Paris; the capital, which for so many years had dictated law to all other capitals, was obliged to capitulate; and, on March 31, Alexander and his allies entered Paris amid the acclamations of the people. The senate, formerly his too serviceable instrument, declared that, "by arbitrary acts and violations of the constitution," Napoleon had forfeited the throne, and absolved all Frenchmen from their allegiance. His own generals, in this the hour of his abasement, insisted that he ought to abdicate, and on April 11, he signed his surrender of power. He was allowed the sovereignty of the island of Elba, with a revenue of 6,000,000 francs, and, after taking leave of his army at Fontainebleau, he departed for his new abode. On May 4, he landed from the British frigate *Undaunted*, at the port of Ferrajo; and Louis XVIII. resumed the seat of his ancestors.—Ten months later, invited by a conspiracy of old republicans, joined to the Bonapartists, Napoleon, who had not ceased to watch and foment the intrigues of Paris, was secretly returning to France. On Feb. 26, 1815, escaping from Elba, he landed at Cannes, not far from Fréjus, with an escort composed of about 1,000 of his old guard. As soon as his arrival was known, a large part of the army, headed by Ney and Colonel Labédoyère, joined his cause; and he made a triumphal progress toward Paris. Europe was overwhelmed with surprise at the suddenness of the apparition. On March 20, and before a shot was fired, Louis XVIII. was driven from the throne to which he had just been restored by the combined armies of the world. The congress of Vienna, still in session, disposing of the rights of nations in a spirit which almost justified the whole previous

career of Napoleon, heard the news with astonishment, and instantly concerted a plan for conjoint resistance to the terrible man. The armies resumed their march toward the French frontier. Napoleon, hastily reorganizing the government, but on a basis more liberal than that of the empire, and having in vain attempted to open negotiations for peace, advanced to their encounter. Drained as France was by a long series of desolating conquests, 250,000 men went forward to meet almost double that number of enemies. On June 15, with 150,000 veterans, Napoleon crossed the Belgian frontier; the next day he defeated the Prussians under Blücher, at Ligny; and, at the same time, he sent Ney against the English army at Quatre-Bras, where he was routed by Wellington. On the morning of the 17th, the latter fell back upon Waterloo, hard followed by Napoleon. The hour for the final battle had come; the French were thoroughly dispersed, and the Great Captain hurried back to Paris. Once more the capital was occupied by foreign troops; a war which had lasted for 23 years was closed; the legislature demanded a second abdication; on the 22d June, just 100 days after his resumption of power, the second abdication was signed; and Napoleon was required to embark instantly for the United States. But Napoleon, arrived at Rochefort, with a view to fly, found that there would be little probability of his escaping the vigilance of the British cruisers, and voluntarily surrendered himself to Captain Maitland, of the British war-ship *Bellerophon*. The British government ordered his detention as a prisoner, and finally consigned him to the island of St. Helena for life. Thus ended the public career of the greatest military genius, not excepting Julius Cæsar, which the world ever saw. He landed at his place of imprisonment Oct. 16, 1815, and remained there, alternately fretting at the restraints imposed upon him, and dictating memoirs of his extraordinary career, until May 5, 1821, when he died of an ulcer of the stomach, the same disease which had carried off his father. On the 8th of May, his remains were interred beneath some weeping willows, near a fountain in Slane's valley; but 20 years afterward, Oct. 18, 1840, the king of the French, Louis Philippe, procured the removal of his ashes to France, where they now repose, beneath a magnificent monument, in the Hotel des Invalides.—Napoleon's marvellous character and career, on which we have here no space to remark, will occupy the pens of the historian and the moralist, for years yet to come; and until that distant day when it shall be clearly discerned that the true greatness of man consists in his superiority in those qualities which distinguish him as man,—in his disinterested love of goodness and truth, and in the energy with which he has caused the same to prevail,—it will be in vain to look for a uniformity of judgment in regard to him; but we need not await a distant day to accord to him the possession of unsurpassed military

ability, of indomitable self-reliance, of unsleeping and prodigious energy, and of the most lofty and commanding intellect, perhaps, that was ever given to a human being.—The bibliography of Napoleon may be said to embrace almost the entire literature of the first part of the 19th century, and therefore we can only refer to a few of the leading works directly illustrative of the principal events of his life. The *Mémoires*, by Bourrienne, the *Souvenirs historiques*, by the Duchess d'Abrantès, the *Mémorial de St. Hélène*, by Las Cases, and the "Voice from St. Helena," by Barry O'Meara, are universally known; and the same may be said of *Le consulat et l'empire*, by Thiers, of the "Life of Napoleon," by Sir Walter Scott, and of the lives by Lockhart and by Hazlitt. In addition to these, the student may consult *Œuvres de Napoléon*, 6 vols. 8vo, Stuttgart and Tübingen, 1853; *Recueil par ordre chronologique de ses lettres, proclamations, &c.*, 2 vols., Paris, 1855; *Histoire de Napoléon et de la France*, by Thibaudau, 10 vols.; *Histoire de Napoléon et de la grande armée*, by Ségur; *Mélanges historiques, sous sa dictée*, by Monthonlon, 4 vols.; *Vie politique et militaire*, by Jomini, 4 vols.; *Mémoires écrits sous sa dictée*, by Gourgaud, 2 vols.; *Documents particuliers sur Napoléon*; *Cours diplomatique et politique, extrait du Moniteur*, 7 vols.; *Correspondance inédite, officielle et confidentielle*, 7 vols.; *Marie Louise et Napoléon, souvenirs historiques*, by Menneval, 2 vols.; *Mémoires pour servir à l'histoire*, by Savary, 4 vols.; *Contestation entre le Saint Siège et Napoléon*, by Schoele, 3 vols.; *Précis des événements militaires*, by Mathieu Dumas, 19 vols.; *Compendio storico su Pio VII.*, Milano, 1824; *Histoire de la révolution d'Espagne*, by Col. Schepeler; Southey's "History of the Peninsular War," and Napier's "History of the War in the Peninsula," 5 vols.; "Despatches of the Duke of Wellington," 3 vols.; *Mémoires sur la guerre de 1809*, by Gen. Pelet, 4 vols.; *La vérité sur l'incendie de Moscou*, by Count Rostopchin, Paris, 1828; Koch, *Mémoires pour servir à l'histoire de la campagne de 1814*; *Histoire de la campagne de l'armée Anglaise, et de l'armée Prussienne, en 1815*, Stuttgart, 1817; *Observations sur la relation de la campagne de 1815*, by Gen. Gourgaud, Philadelphia, 1818; "History of the Captivity of Napoleon at St. Helena, from the Letters and Journals of the late Lieut.-gen. Sir Hudson Lowe," 3 vols. 1853; *Mémoires et correspondances du roi Joseph Bonaparte*, Paris, 1853-55; *Histoire de la restauration*, by M. de Lamartine, 3 vols.; *Les idées Napoléoniennes*, by Louis Napoleon Bonaparte, Brussels, 1839; *Napoleon im Jahre 1818, politisch-militairisch geschildert*, by Carl Bade, 4 vols., Altona, 1841; *Geschichte des Deutschen Freiheitskriegs*, by Dr. Friedrich Richter, 4 vols., Berlin, 1840; *Manuscrit de 1818*, by Baron Fain, 2 vols., Paris, 1825; "The Fall of Napoleon," by Col. Mitchell, London, 1845; Martin, *Histoire de l'expédition de l'Égypte*; *Hist. de France, pendant le XVIII. siècle*, by

C. J. Lacrételle, 6 vols., Paris, 1850; "History of the 18th century, and of the 19th till the overthrow of the French Empire," by F. O. Schlosser (translated by D. Davison), 8 vols., London, 1848-'52; *Témoignages historiques ou quinze ans de haute police sous Napoléon*, by M. Desmarests, Paris, 1888. The 1st volume of Napoleon's correspondence appeared at Paris early in 1858, under the auspices of the government.

BONAPARTE, NAPOLEON FRANÇOIS JOSEPH CHARLES, or NAPOLEON II., the son of the emperor Napoleon, born in Paris, March 20, 1811, died at Schönbrunn, July 22, 1832. He was the fruit of the marriage between Napoleon and Maria Louisa of Austria, and from his birth was styled the king of Rome. When the emperor was compelled to abdicate in 1814, he went with his mother to Vienna, and was educated there by his grandfather, the emperor of Austria. His title there was the duke of Reichstadt, and he was most carefully instructed, especially in the military art. But he appears to have inherited but little of the ability of his father; his constitution was weak, and early symptoms of consumption unfitted him for the laborious duties of a military career. On Napoleon's return from Elba, in 1815, an attempt was made to remove the young duke to Paris, but frustrated by the Austrian authorities. He was made a lieutenant-colonel in 1831, and commanded a battalion of Hungarian infantry in the garrison of Vienna, but his death, when he was but 21 years old, cut him off before he had reached an age in which he might have displayed any abilities he possessed. During his lifetime he never assumed the title of Napoleon II., inasmuch as the abdication of his father, in his favor, was never admitted by the allies, nor was it ever claimed by the French government. But in 1852, when the resumption of empire by Louis Napoleon rendered some title necessary, he was considered Napoleon II., and the new emperor took that of Napoleon III. The latter title, however, having been recognized by the several governments of Europe, the recognition of the former is implied.

BONAPARTE, CHARLES LOUIS NAPOLEON, or NAPOLEON III., is the youngest son of Louis, the king of Holland, and Hortense, daughter of the empress Josephine, who reappears on the throne of France, from which she was expelled by Napoleon I., in the person of her grandson. He was born in Paris, April 20, 1808. The emperor and empress were his sponsors at baptism, and he was an early favorite with Napoleon. As his father and mother soon came to live separately (indeed, they had been alienated before, and it is said to have been at the imperative command of the emperor that King Louis allowed the child to be recognized as his), he was chiefly educated by his mother, who resided in Paris under the title of the queen of Holland. After the battle of Waterloo, the family retired first to Augsburg, where he learned the German language, and subsequently to Switzerland, where they passed their summers, while in

winter they repaired to Rome. The principal tutor of Louis Napoleon was M. Lebas, who, being a stern republican, gave him his first but short-lived inclinations to republican principles. For a time, however, he was at the military college of Thun, where he made some progress in the science of gunnery, but was not distinguished as a scholar. When the revolution of 1830 broke out, he petitioned Louis Philippe to be allowed to return to France, but that adroit monarch refused the request. Louis and his brother, Napoleon, then repaired to Italy, where they took an active part in the revolutionary movements of 1831. But the interference of France and Austria in behalf of the papal authorities soon put an end to these, and the brothers were banished from the papal territory. The elder brother, Napoleon, died at Pesaro, a victim to his anxieties and fatigues, March 27 of that year, and Louis Napoleon, also prostrated by illness at Ancona, was joined by his mother, and having in vain applied for permission to enter the French army, he spent a short time in England, eventually retiring to his mother's chateau at Arenenberg, in Thurgau. The duke of Reichstadt dying in 1832, left him the successor of Napoleon I., not by legitimate descent, but by the imperial edicts of 1804 and 1805, which set aside the usual order of descent, and fixed the succession in the line of the 4th brother of Napoleon, Louis, instead of in that of the elder brother Joseph. This opened a new career to his ambition, and he seems from that time to have set his heart upon the recovery of the imperial position and honors. Nor did he leave any means untried by which he might hope to win over the French people to an approval of his lofty project. He wrote a book called *Réveries politiques*, in which he endeavored to demonstrate the necessity of an emperor to the true republican organization of France. This was subsequently expanded into a larger work, called *Idées Napoléoniennes*, wherein the policy and plans of the emperor were magnified and extolled, and earnestly commended to the adoption of France. But he did not limit his efforts to the publication of books; he put himself in communication with Colonel Vaudry, and other military officers of the garrison of Strasbourg; and, Oct. 30, 1836, he proclaimed a revolution. The soldiers of some regiments received him with acclamation, but the other regiments remained true to their duty, and the attempt resulted in a miserable failure. The prince, however, was taken prisoner, and Louis Philippe, instead of having him executed, consented, at the earnest entreaties of his mother, merely to banish him. He was sent to the United States, where he led a life of idleness for a short time, and then went to South America. The mortal illness of his mother took him back to Arenenberg, in time to see her die on Oct. 5, 1837. As he immediately set to work defending his conduct at Strasbourg, the government of France demanded his extradition from Switzerland, which country at first

refused to comply with the request, but afterward was about to assent to it, when Louis Napoleon voluntarily withdrew to England. There he occupied himself in preparing his *Idées Napoléoniennes*, before referred to, and in getting up a second revolutionary expedition. Accompanied by Count Montholon, who had been the companion of his uncle at St. Helena, and a retinue of about 50 persons, he sailed in a steamboat from Margate in August, 1840. He carried with him a tame eagle, which was expected to perform some exploit to awaken the enthusiasm of the French nation. He landed at Boulogne, marched with his followers to the barracks, and called upon the soldiers to surrender or to join his cause. They peremptorily refused to do either, when a few shots were interchanged, and the prince was compelled to seek safety on a neighboring hill. The eagle did not perform, and the prince was arrested in an endeavor to get back to the steamboat. He was tried for treason before the house of peers, was defended by the eloquent Berryer, but was sentenced to perpetual imprisonment in the fortress of Ham. This exclusion from the world gave him leisure for the exercise of his literary abilities, and he passed some of his time in writing "Historical Fragments," among which is a comparison of the French revolution of 1834 and the English revolution of 1688; also, an analysis of the sugar question, and an essay on the extinction of pauperism, in the last of which a decidedly socialistic tone is assumed. The author proposes, as a remedy for the evils which affect the poorer classes, the establishment of agricultural associations in those parts of the country which are uncultivated, asserting his own determination to act always in the "interests of the masses, the sources of all right and of all wealth, although destitute of the one, and without guaranty for the other." He published, also, *Considérations politiques et militaires sur la Suisse*, and a *Manuel sur l'artillerie*. After remaining in prison 6 years, he managed to effect his escape by the assistance of his physician, in the dress of a workman, and went again to England. When the revolution of 1848 broke out, he repaired to Paris, and was chosen a deputy to the national assembly, from the department of the Seine and 8 other departments. Lamartine, opposing the Bonaparte dynasty, endeavored to effect his banishment from France, but after a stormy debate, Louis Napoleon was admitted to his seat. He professed to be a republican, and as such took the oath of fidelity to the republic. In May, 1850, when the election for president came on, he was found to be the most popular candidate, and was chosen by a large majority of votes. His government as president, nominally republican, was yet steadily directed to the furtherance of his personal schemes. In the beginning of 1851, Changarnier, who commanded the army of Paris, was dismissed, and the legislative assembly, which refused to pass

several bills urged by him, was denounced as factious and refractory. All through the summer the breach between the prince president, as he was called, and the representatives of the people was widened, when suddenly, on the night of the 2d December, the president declared Paris in a state of siege; a decree was issued dissolving the assembly, 180 of the members were placed under arrest, the leading ones being torn from their beds and sent to prison, and the people who exhibited any disposition to take their part were shot down in the streets by the soldiers. A decree was put forth at the same time, ordering the establishment of universal suffrage, and the election of a president for 10 years. Louis Napoleon was of course elected under this decree; and as soon as he found himself firmly re-seated in his place, he began to prepare for the restoration of the empire. In January, 1852, the national guard was revived, a new constitution adopted, and new orders of nobility issued. On Nov. 21 and 22, the people were asked to vote upon a *plebiscitum*, reviving the imperial dignity in the person of Louis Napoleon. The votes were counted largely in his favor, and he was declared emperor, under the title of Napoleon III. Thus the long and eager pursuit of the resuscitation of the Napoleon dynasty was at last crowned with success. In January, 1853, Louis Napoleon married Eugénie, Countess de Teba, a Spanish lady of remarkable beauty and accomplishments, and the result of the union was the birth of a son, March 16, 1856. In March, 1854, Louis Napoleon, in conjunction with England, declared war against Russia,—a war which was conducted by all the parties with great vigor, until peace was resumed in 1856, on terms agreed upon by a conference of the great powers, held in Paris. On a visit of the emperor and empress to England in 1855, they were received with great splendor and enthusiasm. The government of Louis Napoleon has been despotic, and yet to a certain extent satisfactory to the people. Weary of revolutions and civil wars, of which it has had so frequent and dreadful an experience, the French nation seems to prefer the endurance of any kind of government, which can bring it tranquillity and peace, to incurring the hazards of civil strife. Symptoms of dissatisfaction, however, showed themselves during the year 1857, and in the elections for the legislative assembly a most decided expression of opposition was given by the city of Paris. The attempt upon the emperor's life, Jan. 14, 1858, has, moreover, produced greater stringency in the government, and was followed by serious complications with England and other powers.

BONAPARTES OF BALTIMORE. The branch of the family residing in Baltimore, Maryland, was derived from the marriage of Jerome Bonaparte, brother of the emperor Napoleon I., with Elizabeth Patterson, daughter of William Patterson, an eminent merchant in the city of Baltimore. She was scarce 18 years of age,

when Jerome Bonaparte in command of a French frigate landed in New York in 1803. She, at that time, was distinguished by uncommon personal beauty, and is said, moreover, to have strikingly resembled the Bonaparte family. The fame of Napoleon insured for his brother Jerome a distinguished reception in America, and wherever he went he was most hospitably entertained. On visiting Baltimore he saw Miss Patterson, and soon became much attached to her, a partiality which she readily returned, and being ambitious in her views of life, she at once accepted his offers of marriage, and was united to him Dec. 24, 1803. The marriage ceremony was performed by the bishop of Baltimore, John Carroll, brother of Charles Carroll of Carrollton, the signer of the declaration of independence, and in accordance with the ritual of the Roman Catholic church. The marriage contract, considered of importance, was drawn up by Alexander J. Dallas, subsequently secretary of the treasury, and witnessed by several official personages, including the mayor of Baltimore. Jerome Bonaparte remained in America for a full year, visiting, with his wife, various parts of the country. At length they embarked for Europe in the spring of 1805, in the American ship *Erin*, and arrived safely at Lisbon. The news of the marriage proved very distasteful to the dictator of France, partly because Jerome had dared to marry without his consent, and partly on account of his own wish to unite all his brothers to European princesses. Before the newly wedded pair could reach Europe, an order went forth to every port under French authority, forbidding them to land. The hopes of the fair American were now forever blighted, as Napoleon sternly refused to recognize her marriage. Jerome left her at Lisbon, and hastened to Paris, hoping by a personal interview to soften the emperor, directing the vessel to proceed to Amsterdam, as the state of his wife's health would not admit of her undergoing a long land journey, even if a passport could be obtained for her, which was very doubtful. On the *Erin's* arrival at Texel roads, Madame Bonaparte found that an order had been awaiting her coming, which prohibited her from landing. She was obliged to sail at once for England, where she established her abode, and at Camberwell, near London, July 7, 1805, gave birth to a son, Jerome Napoleon Bonaparte, now living in Baltimore. She never saw her husband again, except in a casual meeting many years after their separation. Jerome, who was originally much attached to his wife, in vain petitioned the emperor to recognize her, and was finally obliged to yield to the despot's iron will, and marry the princess Frederica Catharine of Wurtemberg. After the downfall of Napoleon, Madame Patterson (as she was styled for a long period) visited Europe, and is said to have encountered Jerome Bonaparte with his princess in the gallery of the Pitti palace in Florence. On meeting, Jerome started aside, and was overheard to say to the princess, "That

lady is my former wife." He instantly left the gallery, and next morning departed from Florence. Napoleon Bonaparte never succeeded in inducing the pope, Pius VII., to declare Jerome's first marriage null and void. To the pontiff's honor be it said, he invariably refused, and this protest has of late been brought forward in a question involving the rank of the Baltimore Bonapartes, as princes of the imperial household. Madame Bonaparte has, since the birth of her son, generally resided in Baltimore, as she does at present, in the possession of abundant wealth. Notwithstanding her treatment by Napoleon, she has always expressed the highest admiration for him, and prophesies that her grandson is eventually to succeed him as emperor of the French.—JEROME NAPOLEON, son of the preceding, born in England, July 7, 1805. His mother returned to the United States during his boyhood, and he was reared in Baltimore. He entered Harvard college, and graduated from that institution in 1826. Mr. Bonaparte had then some intention of pursuing the legal profession, but, although he studied for the bar, he never practised law. He was married early in life to Miss Susan Mary Williams, daughter of Benjamin Williams, Esq., originally of Roxbury, Mass. Miss Williams was a lady of very large fortune, which, united with Mr. Bonaparte's own property, has made him one of the wealthiest citizens of Baltimore. Since his marriage he has devoted his time to the management of a large estate, and partly to agricultural pursuits. He has two children: a son, Jerome Napoleon, born in 1832, now in the French army, and another son, Charles Joseph, born in 1852. For many years, Mr. Bonaparte received a handsome allowance from his father, with whom he was on terms of intimacy in his several visits to Europe. During the reign of Louis Philippe, Mr. Bonaparte was permitted to sojourn in Paris, but for a short period only, and under his mother's name of Patterson. Although travelling *incognito*, he attracted much attention from his singular likeness to the great emperor. He has always been thought to resemble him more than any of the monarch's own brothers did. He is distinguished by the same shape of the head and perfect regularity of features, bronze countenance, and dark eyes of peculiar tint, which Napoleon had, and which characterize the Corsican people. His figure, too, is cast in the same square mould which we see in the pictures of Napoleon. Mr. Bonaparte has long been on good terms with Louis Napoleon, and since his assumption of the imperial purple, has visited the French court with his son, by the invitation of the emperor. In regard to the validity of his father's first marriage with Miss Patterson, which, if fully recognized by the court of France, would give him precedence over his half brothers and the Princess Mathilde, the children of Jerome's second marriage, nothing has as yet transpired of a public nature. The refusal of the pope Pius VII. to confirm the order of Napoleon I., declaring the American marriage null and void, is still

maintained by the papal court. But up to this time, all transactions affecting the rank of Mr. Bonaparte and his children are considered of a delicate nature, in which the family alone, and not the community, have the right of inquiry. It is well understood, however, that Jerome Bonaparte is violently opposed to the recognition of precedence for the Baltimore Bonapartes, and, as far as he is himself concerned, refuses to acknowledge his son and grandson by any name but that of Patterson.

—**JEROME NAPOLEON**, son of the preceding, born in Baltimore, in 1832. He entered Harvard college, where he remained 2 years, but was transferred to West Point military academy, where he graduated high in his class in 1852. He remained but a short time in the American army, for having visited France, with his father, he attracted the favorable notice of Napoleon III., and resigning his commission in the service of the United States, entered that of the French as sub-lieutenant in the army. He took part in the operations of the French and English allies in the Crimea, and served at the siege of Sebastopol, in Gen. Bosquet's division. For his conduct, which was considered gallant and meritorious, he received a decoration from the sultan. He visited the United States in May, 1858. His appearance, handsome and martial, is not Napoleonic like that of his father, he being tall and slender. He possesses fair abilities, and most amiable manners and character, which win for him many friends. His destiny is, of course, at present, mere matter of speculation, greatly depending on the will, as well as the continued power of Napoleon III.

BONAVENTURA, SAINT (GIOVANNI DI FIDANZA), a cardinal and doctor of the Roman church, and one of the most celebrated of the scholastic philosophers, born at Bagnarea in Tuscany in 1221, died at Lyons, July 15, 1274. He entered the order of St. Francis at an early age, studied in the university of Paris, was appointed professor of theology in 1258, and elected in 1256 general of his order. So great was his reputation for wisdom that, after the death of Pope Clement IV. in 1268, the cardinals, unable to agree upon a successor, bound themselves to elect whomever Bonaventura should designate. By Gregory X. he was raised to the episcopal see of Albano, and to the dignity of cardinal. He died during the session of the second council of Lyons, to which he had been sent as legate of the pope, and his funeral, celebrated with the greatest magnificence, was attended by the supreme pontiff, accompanied by a brilliant retinue of cardinals and kings. He was canonized by Sixtus IV. in 1482, and by Sixtus V. in 1587 he was declared the sixth in rank among the great doctors of the church. The sublime and mystical thoughts which abound in his writings gained him the title of *doctor seraphicus*. The Franciscans regard him as one of their most learned theologians, and compare him with Thomas Aquinas, the scholas-

tico hero of the Dominicans. He is the patron saint of the city of Lyons, where he was buried. His works, consisting of a commentary on the *Magister Sententiarum* of Peter Lombard, and of various songs and devotional and exegetical treatises, have been published at Rome, 1588-'96, in 8 vols. folio (this edition contains some apocryphical pieces); at Lyons, 1688, in 7 vols. folio; and at Venice, 1752-'56, in 14 vols. 4to. The festival of this saint is on July 14.

BONIRATI, an islet about midway between the south-western peninsula of Celebes and the island of Flores. The town, situated on the strait that separates this island from Lambego, is a noted entrepôt of the Bugis traders. Lying directly in the route between Papua, the islands of the Banda and Arcoo seas, and the European emporiums in the west of the archipelago, the roadstead is often crowded with fleets of padewakans, or Bugis vessels, as they go and return with the monsoons, laden with tripang, tortoise shell, massoy, nutmegs, birds' nests, and other articles of interinsular trade. The chief portion of the inhabitants of this islet are Bajans, or the Malay sea gypsies; and although confining their occupations to fishing and piracy, they are often associated with the enterprising and trustworthy Bugis.

BOND, a central county of Illinois, intersected by Shoal creek and its branches, and comprising an area of about 400 square miles. The surface is moderately uneven, and occupied by beautiful prairies and woodland in equal proportions. Coal is found near Shoal creek. The soil is fertile, and the productions in 1850 amounted to 460,985 bushels of Indian corn, 7,655 of wheat, 84,771 of oats, and 114,970 pounds of butter. There were 16 churches, 4 newspaper establishments, and 1,500 pupils attending public schools. The national road passes through the county capital, Greenville. Pop. in 1856, 7,511. The county was named in honor of Shadrach Bond, first governor of Illinois.

BOND, in law, is an instrument in writing by which the party executing it, who is called the obligor, binds himself to another who is called the obligee, to pay a certain sum of money. If this be the whole, it is called a "simple bond," but the ordinary form has a condition underwritten, which is the real contract, the sum named in the other part being denominated the penalty, and which in common practice is double the amount expressed in the condition—that is, when the condition is for the payment of money. The usual incidents of a bond are that by its terms, it is expressed to bind the obligor, and his executors and administrators (sometimes heirs also); that it is under seal, and that it is for the payment of a sum by way of penalty; but none of these are, in fact, indispensable. There may be, as mentioned above, a direct obligation to pay the sum intended to be secured; a man may also bind himself only, without naming executors, administrators, or

heirs, and this would in fact bind his personal representatives to the extent of property of the obligor, which should come to them. The seal is not essential to the validity of the bond, but if not used, the obligation would be held to be of the nature of a promissory note, not negotiable. The effect of the seal is twofold: 1, the limitation of time which shall be a bar to recovery is 20 years; 2, in the distribution of estates of deceased persons, bonds were preferred to common contracts. In the state of New York and other states, the latter distinction is abrogated, and bonds, notes, bills, &c., are put upon the same footing. The penal part of a bond is always for the payment of money, but the condition may be to perform any act, and if it be any other act than the payment of money, the obligee does not recover for the non-performance of such condition the whole penalty of the bond, but only the actual damages sustained by the breach.

BOND, THOMAS EMERSON, M. D., D. D., a minister of the Methodist Episcopal church, born in Baltimore in Feb. 1782, died in New York, March 14, 1856. His paternal ancestors had resided for several generations in Harford county, Maryland. Subsequently his father removed to Buckingham co., Va., and engaged in mercantile business, which he continued for many years. At this place young Thomas received his academic education, and at the proper age, entered upon the study of medicine, with which he connected that of the Latin language. His chief delight, however, was in the study of the English classics, which occupied all his leisure time. He next attended lectures in the medical college at Philadelphia, and subsequently in Baltimore, at the close of which he engaged in the practice of medicine in that city. He rose rapidly in public estimation, while his genial manners and agreeable and witty conversation made him a favorite among the members of the profession. In due time he was called to occupy a professional chair in the medical college of Maryland, an office which he filled until declining health obliged him to resign, and retire to Harford co. for a time, when he returned to Baltimore. In early life he became religious, and always sustained the reputation of a consistent Christian, in fellowship with the Methodist Episcopal church. The church conferred upon him the office of a local preacher, which he filled for many years with honor and usefulness. During what was called the "radical controversy," which resulted in a secession from the church, and the formation of the Methodist Protestant church, he edited the "Itinerant," and, with singular ability defended the polity of Episcopal Methodism. The chief sphere of his usefulness, however, was his editorship of the "Christian Advocate and Journal," the leading official organ of the church, which he conducted with marked ability for a period of 12 years, and of which he was editor at the time of his death. He was a strong argumentative and perspicuous

writer, and none wielded a more vigorous pen in all the controversies which agitated the denomination to which he belonged. His various writings on the polity of Methodism secured for him the appellation of "defender of the church." In all the enterprises of the church, and in all the benevolent movements of the day, he took a most lively interest, and was ever found the unfailing advocate of whatever related to human progress, or whatever tended to meliorate the condition, or enhance the happiness of man.

BOND, WILLIAM ORANGE, director of the observatory at Harvard university, born at Portland, Me., in Sept. 1789. Having gained a reputation as an observer at his private observatory at Dorchester, Mass., he was in 1839 called upon to take charge of the observatory at Cambridge, before yet any buildings were erected. Assisted by his sons, who are engaged with him in the care of chronometers and watches, and by his son, GEORGE PHILLIPS BOND, in the observatory, he has used the noble refractor there to good purpose upon the fixed stars, the nebulae, and the planet Saturn. He has also invented an ingenious piece of mechanism called a spring governor, in which part of a train of clockwork is regulated by a pendulum with a dead-beat escapement, and the other, receiving its motion through an elastic axis, is made to run uniformly by a balance or fly wheel, and thus time is visibly measured to a small fraction of a second. The plan of recording observations by electro-magnetism, known in Europe as the American method, was first brought into practical working by Sears O. Walker, through Mr. Bond's assistance. He is at present engaged, with the assistance of Messrs. Whipple and Black, photographers, in taking photographs of the stars, by a camera attached to the great telescope, and the results are of microscopic accuracy. At the time of Mr. Bond's being called to Cambridge, he was engaged, under the order of the United States government, in astronomical observations, to be used in connection with the South sea exploring expedition. The great telescope was mounted June 24, 1847.

BONDERS, a class of independent land-holders in Norway and Sweden. They are at once peasants and aristocrats, being descended from the old leaders, and sometimes from the princes, of the nation, and yet being also cultivators of the soil, and more rude than the farmers of America, or the yeomen of England. They number $\frac{1}{4}$ of the whole population, and are the principal electors of representatives to the national assembly, in which their power predominates over that of the nobles and clergy. Their ordinary costume is a close red cap, a jacket with metal buttons, and breeches. Their blonde complexion is much reddened by exposure to the weather. Mr. Brace, in his book entitled the "Norse Folk," describes a visit to the estate of a bonder, who boasted his descent from the old Norwegian king, Harold

Haarfager, and received the visitor, according to the ancient custom of the country, with a welcoming drink. Mr. Brace was then conducted through the series of houses which constitute the bonder's dwelling. There was an immense number of bed-rooms, some with plain farmer-like furnishing, others with elegant curtained beds and pieces of splendid furniture. In the store rooms and attic were the winter coats, the bear skins and furs, reindeer boots and high water boots, blankets, comfortables, and dresses, little sleds and sleighs for the snow, piles of round oatmeal cakes, each $1\frac{1}{4}$ foot in diameter, kept for the food of the laborers, spinning-wheels, and shoe-makers' tools. The kitchen was a separate house, and there were in succession several log houses for preserving meats, and for various farm purposes. One of these had a little cupola and bell, which are often seen in the clusters of buildings which make a Norwegian home, and give a centrality to each group. The barn was built on the side of a hill, with easy entrances to each story, the lower story being the cattle stable. This arrangement of the farm houses is described in the old sagas. The ancient Icelandic homesteads had often 80 or 40 houses. The fields of the estate are artificially irrigated, and produce oats, barley, and hay. The cattle during the summer graze in small green pastures on the heights of the mountains, where they are tended by a few dairymaids and men, who make butter and cheese for the winter. This pastoral life is famous in Norwegian poetry and romance. The bonder is aristocratic in his connections; and a burger or noble more frequently marries the daughter of a bonder, than a bonder the daughter of a torpare, or farm servant. By the Udal law the father is obliged to distribute his land equally among his children, the consequence of which is that the estates are often cut up into minute parcels, and the fields divided by innumerable lines of fences. (See Brace's "Norse Folk," New York, 1857.)

BOND00, or Bondou, a kingdom of Africa, between the Senegal and the Gambia. The surface of the country, which is generally flat, save in the northern and central parts, where it rises into hills of no great height, is covered with vast forests and low stunted bushes. From the hills innumerable torrents descend during the rainy season to the Senegal and Falemé rivers. In the vicinity of the towns, where the forests have been cleared, the soil is found to be light and productive. Cotton, grain, rice, indigo, tobacco, and pepper are cultivated with some industry, while different varieties of fruit are scattered in great profusion over all parts of the country. The population, consisting of Foola, Mandingoes, and Serawulis, is estimated at about 1,500,000. The Foola are the dominant tribe. The people are professedly Mohammedans, but are not very strict in observing the precepts of that faith. In every town, however, there are schools in which the reading and writing of Arabic are taught. In

complexion the people of Bondoo are of a light copper color, and in cast of features they resemble the Europeans more nearly than any other tribe of W. Africa, except the Moors. The women are finely formed, neat in person and dress, graceful and majestic in gait, and always wear a veil thrown loosely over the head. The king possesses absolute power, and has under his command a body of about 8,500 troops. The sources of his revenue are, a tenth part of the produce of the land, a tenth part of all the salt imported, and duties on goods passing through his dominions. The capital town is Bulibani (pop. about 8,000), situated in an extensive plain at the foot of a range of rocky hills. It is surrounded by a clay wall pierced with loopholes. The houses are small and irregular; the streets narrow, crooked, and dirty. The royal palace is nothing more than an enclosure about an acre in extent, containing several cottages, somewhat larger than those of the populace, but not a whit more commodious. The useful arts are held in high esteem in Bondoo, and a good trade is carried on with some of the Moorish territories. One of the towns, Sam-cocolo, is famous for its skilful workers in iron and gold.

BONE, the substance which forms the internal skeleton of man and the vertebrated animals; constituting the framework of support, the levers by which force is exerted and locomotion performed, and the boxes or cages in which are enclosed the delicate vital organs. So important are the offices which bone performs, and so indestructible is it compared with the softer portions of the body, that it is popularly regarded as its most essential element; and we speak of resting our weary bones, and of laying them in the grave, thus making them stand for the whole organism. The bony parts of the vertebrated animals are very different in structure and composition from the hard external skeletons of the invertebrata; in the latter, whether we take the external plates of the echinoderms, the corneous covering of the insects, the firmer integuments of the crustacea and mollusca, or the internal stem of the polyp, although the parts perform analogous functions, the chemical constituent is principally carbonate of lime, with a little phosphate of lime and animal matter. The hardness, density, color, and opacity of bone are readily explained by its physical constitution. Bone consists of an organic and an inorganic material, which may be obtained separately by the following simple processes: steep a bone in dilute muriatic or nitric acid, the inorganic or earthy matter is dissolved out, and the organic substance remains, retaining the original size of the bone, and easily bent; in this way is obtained the cartilaginous basis of the bone, on which its shape depends; on the contrary, if a bone be subjected to a strong heat, the organic or animal part is burned out, and the earthy part remains, retaining its form, but crumbling to pieces at the least touch. To the earthy

part, which is principally phosphate and carbonate of lime, 51 per cent. of the former and 11 per cent. of the latter, the bone owes its hardness, density, slight flexibility, and white color; to the animal part, principally cartilage, or some form of gelatine, about 82 per cent., it owes its strength of cohesion. These proportions vary at different ages: in the child, the animal matter forms nearly one-half of the bone, accounting for its greater flexibility and the less liability to fracture at this age; in the old, the earthy matter is about 84 per cent., explaining the great brittleness and easy fracture of the bones in aged persons. In the disease called rickets, quite common among the ill-fed children of the poor in Europe, but somewhat rare in America, there is a deficiency in the deposit of earthy matter, rendering the bones so flexible that they may be bent almost like wax. The power of bone to resist decomposition is remarkable: fossil bones deposited in the ground before the appearance of man upon the earth have been found by Ouvier exhibiting a considerable cartilaginous portion; the jaw of the Cambridge mastodon was found by Dr. O. T. Jackson to contain 42.6 per cent. of animal matter, and cartilage obtained from the same specimen by means of dilute acid was readily converted into gelatine, and made a good glue; a portion of one of the vertebral spines of Dr. J. O. Warren's mastodon was found to contain 80 per cent. of animal matter; from this we see that by means of a Papin's digester a very nutritious soup might be made from the bones of animals who lived before the creation of man. The chemical constitution of bone will be seen from the following analyses by Berzelius and Marchand:

1. Organic or animal matter.....	82.90	82.96
Phosphate of lime.....	51.04	52.36
Carbonate of lime.....	11.30	10.51
2. Inorganic or earthy constituents.....	17.10	17.04
Fluoride of calcium.....	3.00	1.00
Phosphate of magnesia.....	1.16	1.05
Soda and chloride of sodium.....	1.90	1.17
Oxide of iron and manganese, and loss.....		1.05
	100.00	100.00

Some recent authorities deny the existence of fluoride of calcium in bone. Bones are not solid: make a section of almost any bone, and 2 kinds of structure are seen; 1 dense, firm, and compact, on the exterior surface, the other loose, spongy, enclosing cells or spaces communicating freely with each other, in the interior of the bone, and surrounded by the more compact tissue. The loose structure abounds in the ends of bones, securing at the same time greater lightness and sufficient expansion to form the joints, while in the shaft or central portion, where strength is most needed, the compact tissue is more developed. Bones are of different forms, according to the uses to which they are to be applied; some are long, as in the limbs, and these are the principal levers of the body; others are flat and thin, composed of 2 layers of compact tissue, with an intervening cellular structure, destined to enclose cavities. Bones have also a variety of

eminences and depressions, for the attachment of muscles, the protection of nerves and vessels, &c.; these eminences, or processes, are well marked in proportion to the muscularity of the subject. In females and feeble men the bones are light, thin, and smooth, while in the powerfully muscular frame the bone is dense and heavy, and every prominence is well developed. Exercise is as necessary to the strength of a bone as it is to the strength of a muscle; if a limb be disused from paralysis, or the body be prostrated by long disease, the bones waste as well as the soft parts. The external surface is perforated by numerous minute openings, which transmit the arteries and veins to the interior; this surface is covered by a firm tough membrane, the *periosteum*, composed of densely interwoven white fibrous tissue. The cells, or *cancelli*, of the spongy portions of bone, are made up of thin and inosculating plates of osseous tissue, enclosing spaces between them which are filled with marrow or *medulla*; these are lined with a delicate membrane. On a superficial observation it appears as if the plates of the cancellated structure were arranged without definite plan; but the researches of Dr. Jeffries Wyman and others show that the cancelli of such bones as aid in supporting the weight of the body, are arranged either in the direction of that weight, or in such a manner as to support and brace those cancelli which are in that direction; the arrangement of these bony plates in the lumbar vertebrae, the neck of the thigh bone, in the tibia, and in the ankle and heel, is of itself enough to indicate that man, alone of animals, naturally assumes an erect position; this relation is most evident in the above-mentioned bones, and in the adult, it being less observable in youth and old age. There is no real difference between the compact and the spongy structure of bone, the degree of condensation being the only distinction. The cells of the cancelli communicate freely with each other. In the long bones the marrow is not contained in cells, but in one central medullary canal, lined by a membrane. Both the periosteum and the medullary membrane are abundantly supplied with blood-vessels, and are, therefore, intimately connected with the nutrition of the bone, and the destruction of either, to any great extent, leads to the death of the part in contact with them. Microscopic examination can alone explain the intimate structure of bone. If a thin transverse section of a long bone, as the *femur*, be examined under the microscope, the compact tissue will present several dark circular or oval spots, surrounded by numerous concentric lines; in these lines will be perceived minute black spots, with other lines leading from them in various directions. The larger oval or circular spots are the openings of vascular canals, called "Haversian," from their discoverer, Clopton Havers; these canals are numerous, taking a course parallel to the axis of the bone, joined together by free inosculations of short transverse branches; they thus form a net-work of tubes for the

minute vessels which they convey and protect. According to Todd and Bowman, the arteries and veins usually occupy distinct Haversian canals, a single vessel being distributed to each. The canals conveying the veins are said to be the larger, and to present at irregular intervals, where two or more branches meet, pouch-like sinuses which serve as reservoirs to delay the escape of the blood; in some of the irregular bones, as in those of the skull, the venous canals are extremely tortuous, running chiefly in the cancellated structure, there called *diploë*. The Haversian canals vary in diameter from $\frac{1}{150}$ to $\frac{1}{100}$ of an inch, the average being about $\frac{1}{125}$, and their ordinary distance from each other about $\frac{1}{10}$ of an inch. This whole apparatus of canals is only an involution of the surface of the bone, that the vessels may come into a more free contact with it; as they communicate internally with the medullary cavity, externally with the periosteal surface, and also with the cancellar medullary cells, the net-work of nutrient vessels is very complete. But, as if this arrangement were not enough to secure the nourishment of such a hard tissue as bone, and so far removed from immediate contact with bloodvessels, there is a still more curious and delicate apparatus of microscopic cavities. Around the Haversian canals will be noticed the appearance of delicate *lamellæ* of bone, more or less concentric; these, with the lacunæ mentioned below, are the most essential constituents of true and fully developed bone, the medullary cells and Haversian canals being merely definite spaces existing between the lamellæ. It is principally by the successive development of new lamellæ that bones increase in diameter, being usually deposited in the direction of the axis. A transverse section, therefore, under the microscope would present the following arrangement of lamellæ, as given by Hassall: 1, several layers passing entirely round the bone; 2, others encircling each Haversian canal; and lastly, irregular and incomplete lamellæ occupying the angular spaces between those concentrically arranged. The lamellæ of the Haversian canals, however, are not exactly concentric, as commonly described, but incomplete and running into one another at various points, a necessary consequence of the irregular distribution of the lacunæ. The Haversian systems generally run in the direction in which the tissue requires the greatest strength. With the previously mentioned arrangement of the cancellated structure, the Haversian canals more fully display the wonderful adaptation of means to ends, combining mechanical advantages with the best provisions for the nutrition of the tissue. The number of lamellæ passing entirely round the bone is generally less than 12, and those encircling each Haversian canal vary from 2 or 3 to more than 12, the smallest canals having the fewest lamellæ. The lamellæ, according to the best observers, appear to consist of a delicate network of fibres in sets, the fibres of each set running parallel, but crossing the others ob-

liquely; some have supposed that they are produced by the union of a number of diamond-shaped cells, and not by the crossing of fibres; the first opinion is probably the true one. Distributed through the cancellated and compact portions of bone occur numerous black specks in the lines of the lamellæ; these are the *lacunæ*, or bone cells. Opinions differ concerning the structure of these cells: by some they are considered as mere vacuities in the osseous tissue; by others as hollow cells, as nuclei of cells, and as true nucleated corpuscles. Two views are entertained by histologists with regard to the formation of lacunæ: the first is that given in the "Physiological Anatomy" of Todd and Bowman, who maintain that the lacunæ are developed from the nuclei of the cartilage cells; the other is that of Mr. Tome, published in "Todd's Cyclopædia," article "Osseous Tissue," who asserts that they are mere cavities left in the newly formed bone, from which the canaliculi are afterward developed. Mr. Quekett, in his "Lectures on Histology," in the chapter on "Enchondroma and Ossifying Cartilage," favors the view of Todd and Bowman. Mr. Hassall, in his "Microscopic Anatomy," says that it cannot be doubted that the bone cells take their origin in nucleated cells, and that the passage of fluids through them, their infiltration with solid matter, and their optical appearances, admit of explanation on the supposition of their corpuscular origin. But, whatever their origin, sets of minute pores from the Haversian canals open into the cavities, or lacunæ; from these, other pores, which have received the name of *canaliculi*, open into lacunæ in the vicinity; the canaliculi inosculate freely, penetrating the lamellæ, thus establishing a free communication throughout the substance of the bone; communicating as they do with the bloodvessels of the Haversian canals, and circulating by the canaliculi the nutritious materials, each bone cell may be considered as a reservoir of nutriment for the bony matter surrounding it. These recesses in the bone, or lacunæ, are of very different shapes in the vertebrated animals; but in man and the mammalia they present a very constant form, being oval, and, as it were, compressed between the laminae, and, on section, presenting an elongated fusiform outline. They have an average length of $\frac{1}{150}$ of an inch, and they are usually about $\frac{1}{2}$ as wide and $\frac{1}{4}$ as thick. The diameter of the pores, or canaliculi, is from $\frac{1}{1500}$ to $\frac{1}{1000}$ of an inch. The size of the bone cell in the vertebrata stands in relation to that of the red blood disk; Mr. Quekett believes that the class to which any animal belongs, whether that of beast, bird, reptile, or fish, may be thus determined—a means of diagnosis of the utmost importance in ascertaining the character of many fossil bones. In *mollities osium* the earthy constituents of the bone are deficient, and the whole process of nutrition is disordered; the lacunæ increase in size, several uniting to form one cavity, which is occupied by a kind of adipose tissue, so that Mr. Quekett considers this

disease, which results from the dissemination of cancerous matter through the system (according to some pathologists), as an example of the fatty degeneration of bone. From the researches of Mr. Tomes and Mr. Quekett it appears that the ultimate structure of bone consists of a congeries of granular, and rarely of crystalline, particles, deposited in an organized matrix; these granules are often distinctly visible, without any artificial preparation, in the substance of the delicate spicula of the cancelli, varying in size from $\frac{1}{1000}$ to $\frac{1}{100}$ of an inch. Bone may consist of a mere aggregation of these granules, unpenetrated by any perceptible pores, constituting the simplest form of this tissue; in many kinds of ossific deposit, as in the early stage of ossification of the arteries, and in ossified fibrous tumors and cysts occasionally met with in various parts of the body, nothing but these granules can be seen; they are also generally to be found in the pus which escapes from necrosed bones, this fluid seeming to have a solvent power, decomposing the animal matter, while the mineral constituent, or phosphate of lime, escapes in its granular condition. In the cartilage of the shark and skate the ossific matter is in the form of granules, and occurs principally in the neighborhood of the cells, and, in the latter sometimes within the cell wall; to the latter Mr. Quekett gives the name of cellular, and to the former that of inter-cellular ossification. In joints which have been deprived of their cartilage by disease there is often found what is called the ivory-like or porcelaneous deposit, presenting a highly polished appearance; Mr. Quekett ascertained that in such surfaces there was an almost total absence of the Haversian canals, and has concluded that the new osseous matter, prevented by friction from being thrown out on the surface, was employed in filling up the canals, converting the usually porous bone into a solid mass, capable of taking a high polish; this view corresponds with the practice adopted in filling up the pores of many hard woods, in order that a perfect polish may be obtained. The *periosteum*, a dense, fibrous membrane, richly supplied with bloodvessels, covers the external surface of all bones, with the exception of their articular extremities. The medullary membrane serves as an internal periosteum of a more delicate character, prolonged into the Haversian canals and cancelli, which are filled also with marrow or fat-cells, enclosed in a loose cellular tissue. The vessels of bone are supplied from the periosteum, and ramify, as has been seen, through the Haversian canals; in the long bones a large artery penetrates by the nutritious foramen into the medullary cavity, sending branches to the medullary cells, and anastomosing with the capillaries from other sources. Nerves have not yet been detected in the interior of bones supplying strictly the osseous structure, but the painfulness of many diseases of the bones shows that the external and internal vascular surface must be supplied with nerves. Lymphatics,

most probably, also exist in bone. At the earliest period of the appearance of a skeleton in the embryo, it consists of a series of cells; these increase in number and density, and are held together by an intercellular substance, thus forming temporary cartilage, which is afterward converted into bone, but not completely until adult age. Ossification commences at determinate points or centres, the first of which is in the clavicle, and appears during the 4th week; then follow the lower jaw, ribs, femur, humerus, tibia, and upper jaw; the spine and pelvis are late, and the knee-pan does not begin to ossify till after birth. There are generally several ossific centres; for instance, in the long bones, one for the shaft, and one for each extremity. The central part of the bone is the *diaphysis*, and is not united till long after birth to the ends or *epiphyses*; processes of bone are called *apophyses*. Ossification generally extends in the intended direction of the chief strength of a bone. According to Todd and Bowman, the process by which cartilage is converted into bone is as follows: The small nucleated cells, with comparatively large and granular nuclei, are uniformly scattered through a homogeneous intercellular substance; at the points of ossification the cells begin to assume a linear series, running down toward the ossifying surface, and separated from one another by the intercellular substance; the cells are closely applied to one another, and so compressed that even their nuclei seem often to touch; the lowest rows rest in deep, narrow cups of bone, formed by the ossification of the intercellular substance; the cups are gradually converted into closed *areolae* of bone, with their lamelliform walls. During this first stage of the process there are no bloodvessels directly concerned. The lamellae of the areolae, or cancelli, become thicker, and include in their substance elongated oval spaces of a roughly granular nature, in other respects resembling lacunae, and considered by these observers as the nuclei of the cells of the temporary cartilage; within the cancelli only a few cells are found, these cavities being chiefly occupied by a new granular substance, resembling a formative *blastema*, like that out of which all the tissues are evolved; the cells are in apposition with the wall, and sometimes one seems half ossified, and its nucleus about to become a lacuna; these nuclei have now the same direction as the neighboring lacunae; from the blastema the vessels are probably developed and the necessary elements for the growth of the bone. The cancelli, at first closed cavities, communicate at a subsequent period, and go to form the Haversian systems, a net-work of vessels becoming developed within them at the same time. The subsequent process of ossification consists essentially in the slow repetition of the above on the entire vascular surface of the bone. The canaliculi begin as irregularities in the margin of the lacunae, and are converted, as the tissue becomes consolidated, into the branching tubes which have been described above, and are accordingly

formed in the ossified substance of the cartilage cells. As to the lacunæ, their granular interior seems to be gradually removed, and they become vacuities for the conveyance of the nutrient fluids. Agreeably to this theory of the formation of bone, Todd and Bowman believe that it grows chiefly by layers formed in succession on its vascular surface, but also in an interstitial manner after being originally deposited. A most important process of growth is constantly going on in cartilage by the multiplication of the cells and the increase in their dimensions; in the long bones this growth is most active in the longitudinal direction. Bones also increase by the addition of new systems of laminae on their exterior, and by new involutions of the vascular surface to form new Haversian canals, as has been proved by experiments with madder mixed with the food of animals; the coloring principle of this substance has a remarkable affinity for phosphate of lime, and it affects first the portions of bone in course of formation, or those nearest to the vascular surface. Wherever there is a vascular network in the structure of bone, whether on the periosteal or internal surface, there growth takes place; the exterior increase is strictly analogous to the exogenous mode of growth in plants. A third mode in which bone grows seems to be by the dilatation of the primary cancelli and central Haversian canals; by this enlargement of the interior the strength of the compact exterior is increased without the disadvantage of an increase of weight. The reparative power of bone is of the greatest importance in surgery. When a bone is broken, blood is effused, with the coagulum of which a semi-transparent lymph is subsequently mingled, covering the surfaces of the wounded parts; in the course of 2 to 8 weeks this is gradually condensed by an interstitial change, which converts it into a substance resembling temporary cartilage; ossification takes place in this in a nearly uniform manner, and the whole is transformed in from 4 to 6 weeks into a spongy osseous mass which holds the ends of the bone together; this provisional *callus*, as Dupuytren called it, is gradually absorbed during the succeeding months, while the permanent callus is being deposited between the contiguous surfaces of the compact tissue; the permanent callus has all the characters of new bone. When this reparative process is interfered with by meddling surgery or constitutional disease, the union takes place merely by ligament, constituting sometimes a false joint.—This is the usually received opinion as to the structure and growth of bone; but accurate observers differ from this view in several important particulars; and especially does Mr. Hassall object to some of the above conclusions. This microscopist insists on what is termed intra-membranous, as distinguished from intra-cartilaginous ossification; the former is considered as belonging to certain flat bones of the cranium, and to the outer surfaces of the

long bones; in the parietal bone, for instance, the first ossific deposit takes place in the fibres of fibro-cellular tissue, intermingled with numerous granular nucleated cells, bone cells in a rudimentary state, cartilage not being at all concerned in any one stage of its development. Whenever cartilage is present in connection with this and similar bones, he maintains that it merely serves as a support, without taking any part in the ossific process. He not only does not believe that the formation of bone always takes place in cartilage, but says that the intra-cartilaginous ossification does not essentially differ from the intra-membranous form; that a bone grows in length by the constant development of cartilage cells, and their arrangement in linear series, of which the lowest dip into the cancelli and are absorbed, while the cancelli are continually invading the inter-cellular spaces of the cartilage; that bones increase in diameter chiefly by the expansion of the external and internal Haversian canals; that the new osseous deposit takes place in fibres, and that a layer of cartilage is no more necessary on the external surfaces of growing bones than it is in the medullary cells and Haversian canals; that the bone cells, or lacunæ, are not transformed nuclei of cartilage corpuscles, but take their origin in the granular cells noticed among the fibres (two kinds of granular cells seem to exist in the medullary spaces, one the rudimentary bone cells just alluded to, and the other, with regular, sharply defined, and often yellowish nucleus, connected with the elaboration of marrow—the latter probably the same as those described by M. Robin in the *Gazette médicale*, Dec. 22, 1849, under the name of medullary cells); and that, as the bone-cells are to be regarded as complete corpuscles, the canaliculi are formed by the prolongations of the cell walls. For this author's opinions on the mode of formation of the medullary cavity and Haversian canals, we must refer to his "Microscopical Anatomy," art. 15. Space will not permit any more details on this intricate and interesting subject, which is fully discussed in the works cited above.—In reptiles and fishes the cancellated structure usually extends throughout the shaft, which is not so well divided into solid bone and medullary cavity as it is in mammalia. *Lacuna* are highly characteristic of true osseous structure, being never deficient in the minutest parts of the bones of the higher vertebrata, though those of fishes are occasionally destitute of them. The lacunæ of birds are longer and narrower than those of mammals, and the canaliculi are remarkably tortuous; in reptiles they are remarkably long and narrow, and in fishes very angular, with few radiations; their size is not in relation to the size of the animal, since there is no perceptible difference between their size in the large extinct iguanodon and in the smallest living lizard. In the "Quarterly Journal of Microscopical Science" (London), for 1857, is an excellent paper

by the Rev. J. B. P. Dennis, on the microscopic characters of bone as the means of determining the class of animals to which fossil bones belong. After giving the distinguishing arrangement throughout the vertebrata, he arrives at the conclusion that the Haversian canals are intimately connected with the movements and habits of life of the animal in which they are found; that the lacunæ obey the same law, and adjust themselves to the strains, pressure, and requisite density of any bone; that the canaliculi serve it also, but without any confusion of the great classes of the vertebrata; and that all evince an admirable unity of design, and a harmonious correspondence of the bones with the muscles, tendons, &c., of organized beings. From the emarginated and festooned outline often seen on sections of bone, Dr. Carpenter, in his "Principles of Human Physiology," expresses the opinion that the older portions of the osseous substance are removed from time to time, and that the irregular outline thus presented by the Haversian spaces is caused by the partial or complete removal of Haversian systems; in their stead newly formed tissue is deposited; this alternate absorption and reproduction takes place at all times of life, though its energy diminishes with the increasing age of the individual. The complete development of the osseous system characterizes the final stage of the growth of the organism; the vertebral column does not completely ossify in its spinous and transverse processes until the 25th or 30th year; the ossification of the head and the tubercle of the ribs, commencing soon after puberty, is not continued to the body of the bone till some years after; the ossification of some of the cartilages of the sternum is often not completed even in quite advanced age; the bones of the skull are united within a few years after birth. As long ago as Aristotle's time, the duration of the life of animals was measured by their period of growth. Buffon had the same idea, for he says: "The duration of life, to some extent, may be measured by the time of growth." Flourens, following up this idea, divides life into 4 periods: infancy, from birth to the 20th year, at which time the development of the bones is completed, and the body attains its full length; youth is prolonged to 40, because it is only at that age that the increase of the body in size terminates; manhood to 70, and old age to 100 years. The duration of ossific growth, then, has been made the criterion to determine the physiological duration of animal life. Animals and man grow only until union takes place between the shafts and the ends of the bones; this union occurs in man at the age of 20 years, in the camel at 8, in the horse at 5, in the ox and lion at 4, in the dog at 2, in the cat at 1½, and in the rabbit at 1 year. Recent observations go to show that animals live about 5 times their period of growth; this would give, according to Flourens, as the age at which man should arrive, if he lived in accordance with

the laws of physiology and hygiene, about 100 years; for the camel 40, the horse 25, the ox and the lion 20, the dog 10, the cat about 8, the rabbit 5 years. In an elephant which died at the age of 30 years, the ends of the bones were not united to the shafts, so that it may be confidently asserted that this animal lives more than 150 years. Animals occasionally live beyond these periods, and man has been known to live 160 years; but these are cases of extraordinary life, both in animals and in man.

BONE, HENRY, English enameller, born at Truro, in Cornwall, Feb. 6, 1755, died in London, Dec. 1834. Brought up to the art of painting upon china, which he learned in Bristol, he removed to London at the age of 24, and was there employed in enamel painting for watches and jewelry. Having conceived the idea of raising enamel painting from the mere hardness and dry effect of china to the full depth and brilliancy of oil pictures, he employed his leisure in executing enamel miniatures of his wife and himself, which were displayed and admired in the royal academy exhibitions of 1780 and 1782. Soon after, he commenced business on his own account, as a miniature painter on ivory, sometimes in enamel. He increased the size of his plates beyond any thing which had been previously attempted, and among his most eminent productions is a copy of Titian's Bacchus and Ariadne, on a plate 18 inches by 16, for which he was paid 2,200 guineas. In 1811 he was elected a royal academician. He produced 3 collections of great celebrity: 1, a series of portraits of the Russell family, from the time of Henry VII. to that of William IV., for the duke of Bedford, and now in Woburn abbey; 2, a set of the principal royalists during the civil war of Charles I., executed for Mr. Ord, of Edgehill, near Derby; and 3, 85 portraits of illustrious characters in the reign of Elizabeth. This series, which was unfinished at his death, and had occupied 25 years of his leisure, was completed by his son H. P. Bone, who had assisted him in all his later works.

BONE ASH. Bones, when calcined in open fire, lose all their organic matters, and part of the carbonic acid gas they contain, by which their weight is diminished about ¾. The residue is a dry, friable, and white mass, of the original form of the bones. Pulverized, the powder is grayish white. It consists of basic phosphate of lime, with some lime, fluoride of calcium, carbonate and sulphate of soda, and phosphate of magnesia. The sulphur of the sulphate comes from the cartilage. Prepared from the bones of cattle, the proportion of phosphate of lime is about 90 per cent.; from human bones about 86 per cent. Other matters may be removed by dissolving in hydrochloric acid, and precipitating by ammonia, when the phosphate of lime and a very small quantity of phosphate of magnesia alone are left in the solution. Bone ash, ground to powder, is made into a paste with gum-water, or beer and water, and moulded into the form of cups, called

cupels, which are used in the process of cupellation. This is separating silver or gold from lead, by melting the alloy of the metals in the cupel, and subjecting it to the action of a current of air, which oxidizes the lead, converting it into litharge. This is absorbed by the bone ash as fast as it is produced, till the precious unoxidizable metal is at last left pure and alone in the cupel. The operation is conducted in the same manner on the large scale and in small assays. When carefully prepared, and freed from foreign matters by levigation, bone ash is called burnt hartshorn, and is used for cleaning articles of jewelry.

BONE BLACK. When bones are burned in close vessels at a red heat, a black carbonaceous substance is left, of about one-half their original weight; that, when ground to powder, is called bone black. The name ivory black should properly be limited to the finer and more expensive article prepared from ivory. The volatile products of the distillation of bones are carbonic acid and ammoniacal vapors. The latter may be collected, as they sometimes are, in forming with them salts of ammonia. The fixed products, which constitute animal charcoal, or bone black, consist of phosphate and carbonate of lime 88 per cent., nitrogenized charcoal 10, and carburet or siliciuret of iron 2 per cent. The powder resembles that of vegetable charcoal, but is more dense and less combustible, and its ashes are not so readily soluble in sulphuric acid as those of charcoal. The process of preparing the material varies according as the ammoniacal vapors are saved, or allowed to go to waste. In the former case the bones, cleaned of their fatty matters, are carbonized in cast-iron cylinders, which connect by a 3-inch pipe with the condensing apparatus. The cylinders are kept at a red heat for 86 hours, when the charred bones are taken out, and the cylinders are refilled. The bones are then ground in mills. The volatile products are, in some instances, discharged under the fire, by which they are consumed, and their disagreeable odor destroyed. In this way, also, they afford some heat, and save fuel. By the other process, the bones are put in cast-iron pots, which contain each about 25 pounds, and these are put together in pairs, mouth to mouth, and luted. They are then piled up in an oven or kiln, the entrances to which are tightly bricked up, except those for the admission of the flame from the furnace connected with the kiln, and the opening into the chimney. The pots are well heated for 16 to 18 hours by the flame playing around them, and this is increased by the combustible vapors which issue from the bones. Much of the volatile matters passes off unconsumed through the chimney, and diffuses an intolerable odor around the neighborhood. This might be remedied by conveying them through a second fire, kept up with dry wood, before allowing them to escape.—The valuable property possessed by bone black is its absorbing completely the color of organic solutions, and leav-

ing the liquid clear and limpid; this is greatly facilitated by heating the mixture to the boiling point. Vegetable charcoal possesses the same property also, but in a much less degree; unless, perhaps, peat charcoal should prove, as stated by a French authority, to be an exception to the other vegetable charcoals, and be nearly as efficient a decolorizer as animal coal. From the year 1800 wood-coal continued to be used for decolorizing crude sirups, for which purpose it was about this time recommended by Löwitz, chemist of St. Petersburg; but, in 1811, M. Figuier, of Montpellier, discovered the stronger power of animal charcoal to effect this purpose, and this being put in practice the next year by Desfosses and Payen, it has since superseded the use of vegetable coal. Although this property of charcoal has been ably investigated by distinguished chemists, as Bussey, Payen, and Desfosses, it does not yet clearly appear upon what it is dependent, nor whether it acts mechanically or chemically. M. Bussey has shown that bone black used for decoloring an indigo solution in concentrated sulphuric acid, and this diluted with water, does not give the slightest trace of sulphate of indigo by repeated washing, but does of free sulphuric acid. Treated, however, with an alkaline wash, the charcoal gives up the indigo; thus appearing as if it acted as a weak base, and the coloring matter as an acid. There are also other reasons for supposing that coloring matters generally act as acids. The efficiency of the charcoal is greatly dependent upon its being in a minute state of division. The earthy matters combined with the carbon of bones, no doubt, have great influence in effecting this condition. Vegetable coal attains it to some extent, and the decolorizing property also, by being finely comminuted previous to charring, and mixed with pulverized pumice, quartz, or calcined bones, or with some chemically acting ingredient, as carbonate of potassa. The most powerful decolorizer is charcoal obtained in the manufacture of Prussian blue by calcining animal matter with potassa. It is the purest form of charcoal, freed by the potassa from its nitrogen, and reduced by chemical segregation to the finest particles. Carbon obtained by decomposing carbonate of soda also possesses this property in a high degree, from the fine state of division in which its particles are found, so that it would appear to be by no means peculiar to animal charcoal. Even other substances than carbon are observed to possess the same property, as has been shown by E. Filhol, such as sulphur, arsenic, iron reduced by hydrogen, &c. Beside extracting the color of fluids, animal charcoal takes away the bitter principle from bitter infusions, and iodine also from its solutions; and it is found by Graham, that various inorganic substances are abstracted from their solutions, as lime from lime water, and metallic oxides, as lead, from solution in water. Bone black that has been once used for refining sirups, may be revived, so as to answer the same purpose again.

The process consists in thoroughly washing out the saccharine matters absorbed, and, in some establishments, in dissolving the lime, which is also taken up by the bone black, by long-continued digestion in water acidulated with hydrochloric acid. The charcoal is then again calcined in crucibles, or, as in France, in reverberatory furnaces. High steam is said also to restore its property, but this cannot remove the lime. Several forms of furnace have been contrived in England to effect this purpose; and retorts are used which hold 50 pounds of charcoal, and in which the reburning is completed in 15 to 20 minutes.—Beside its use for decoloring sirups, bone black is also applied to extract from spirits distilled from grain the volatile poisonous oil, called fusel oil, which gives to the liquors a disagreeable taste. It is also a disinfecting agent. For chemical and pharmaceutical purposes, bone black requires to be purified, that is, freed from the phosphate and carbonate of lime which constitute its principal part. Dilute hydrochloric acid is used to dissolve these out, and the residue, being well washed, is pure animal carbon. It is used to absorb the active principles of plants from their boiling infusions. The charcoal, after being well washed and dried, is then mixed with boiling alcohol, to which it imparts the principle it absorbed from the vegetable infusion, and an alcoholic extract is obtained. The alcohol then may be distilled off, and the pure substance recovered. Quinia, strychnia, and many other vegetable principles, are thus procured. The purified article is found to be an antidote to vegetable and animal poisons. Dr. B. H. Rand, of Philadelphia, has proved by experiment, that the strongest vegetable poisons may be taken with impunity if mixed with it.—The refuse animal black of the sugar refiner is largely used as a manure, particularly in France. From the investigations of M. A. de Romanet, it appears that, in old soils exhausted of *humus*, it produces no effect, having none of this substance to restore to the soil. But it gives out the ammonia it had taken up in the sirups, and neutralizes the bitter and acid principles of healthy or new soils; the phosphates, too, it contains are rendered soluble in water, and are thus furnished to the grains that require them.

BONE DUST. Bones are crushed and ground to dust for manure. The finer the dust, the more rapid is its action; the coarser the particles, the longer is their effect slowly given out. This substance is beneficial to the growth of plants from its affording them several of the constituents they require. The following analyses show what these ingredients are: The phosphate of lime of the solid bone, and the ammonia furnished by the organic matters connected with it, are particularly beneficial. The first analysis is of a fossil horse by Braconot, quoted by Johnston in his treatise on manures; the second is an analysis of what is called a very excellent sample of the prepared article, consisting mostly of the bones of the horse,

given in the article on agricultural chemistry in the "Encyclopædia Britannica;" and the third is of dry ox-bones, by Berzelius.

1. Phosphate of lime.....	69.8
Water.....	11.0
Gelatine.....	4.6
Carbonate of lime.....	4.5
Bitumen.....	4.4
Silica.....	4
Phosphate of magnesia.....	1
Alumina.....	0.7
Oxide of iron.....	0.5

100.0

2. Phosphate of lime.....	48.95
Water.....	6.26
Organic matter.....	86.18
Lime.....	2.57
Magnesia.....	0.80
Sulphuric acid.....	2.15
Silica.....	0.80

100.00

Ammonia in the organic matter..... 4.80

3. Phosphate of lime, with a little fluoride of calcium.....	87.85
Bone gelatin.....	88.90
Carbonate of lime.....	8.85
Phosphate of magnesia.....	2.05
Soda, and a little chloride of sodium.....	8.45

100.00

So valuable is this substance regarded as a manure in England, that in the report of the Doncaster agricultural association it is stated that 1 wagon-load of small drill bone dust is equal to 40 or 50 loads of fold manure. Upon thin and sandy land it is particularly effective, and continues to act for several successive crops. It is best applied when mixed with earth and fermented, and at the rate of 25 bushels of fine bone dust and 40 of broken bones to the acre. It is also used as a top dressing, sown broadcast and by the drill. Pasture and grass lands are greatly benefited by it; white clover springs up wherever it falls; and the turnip crop is largely increased by its application.—In this place, the use of dissolved bones may also be noticed. By treating bones with $\frac{1}{2}$ their weight of sulphuric acid and as much water, the phosphate of lime is deprived of half its base, and converted into a superphosphate, which is wholly soluble in water. The lime taken from the phosphate unites with the sulphuric acid, and becomes a sulphate. The mixture, after undergoing this process, is a dry mass, which is sold by the name of superphosphate of lime. The following are analyses of 2 of the best varieties of the English article:

Water.....	10.50	26.97
Organic matter.....	26.47	16.18
Phosphates.....	84.29	27.18
Sulphate of lime.....	12.14	11.89
Sulphuric acid.....	14.40	13.98
Alkaline salts.....	0.73	2.54
Sand.....	1.48	5.81

100.00

100.00

Ammonia.....	8.17	1.89
Soluble phosphates.....	22.97	19.58

The commercial superphosphates do not often contain so large a proportion of soluble phosphates, but are sometimes nearly entirely deficient in them; and as it is this principally which gives them value, too great care cannot be taken to ascertain their composition before purchasing, and those particularly should be regarded as of inferior quality, which contain carbonate of lime or of magnesia.

BONE EARTH. This term is loosely applied, sometimes to bone ash, of which cupels are made, and sometimes to the earthy phosphates which constitute the principal portion of bones. This is its signification when used in animal chemistry.

BONELLI, FRANCESCO ANDREA, an Italian naturalist and entomologist, noted for his publication on Sardinian birds, born 1784, died Nov. 18, 1880, at Turin, where he was for many years professor of zoology and director of the cabinet of natural history.

BONESET, or THOROUGH-WOET, the herb *eupatorium perfoliatum*, an indigenous perennial plant, growing in moist places, distinguished by the perfoliate character of its leaves, each pair of which are at right angles to those immediately above and below. It is a bitter weed or vegetable tonic, with a faint odor and a strong bitter taste. Hot water extracts its virtues, which are believed to reside chiefly in a bitter principle. The cold infusion acts as a mild, pleasant tonic; the hot infusion as a diaphoretic, and, when very strong, as an emetic. Strong infusions of boneset leaves are used as a substitute for Peruvian bark, in cases of ague, and sometimes with success; but it is not always to be relied on. A pint of boiling water is poured upon an ounce of the dried leaves, or a pint of cold water upon an ounce of the fresh leaves, and allowed to stand 2 hours: it is then strained for use. A weak cold infusion is good for all cases of debility where tonics are prescribed. For ague, as much should be taken as the stomach will bear, and it should be drunk warm.

BONET, JUAN PABLO, a Spanish teacher of the deaf and dumb of the 17th century, distinguished as one of the first teachers of this class, and the author of a remarkable work, *Reduccion de las letras y artes para enseñar a hablar a los mudos*, which was published in Madrid, 1620. It explained his method of instruction, contained the first alphabet for the deaf and dumb, and was of good service to Dalgarno, Wallis, and, a century later, to the Abbé de l'Epée, who acknowledged his indebtedness to Bonet's labors.

BONHEUR, ROSA, a French painter, born at Bordeaux, May 22, 1822. In 1829 her father, Raymond Bonheur, a painter, removed to Paris and put his daughter in a boarding-school, and also apprenticed her for some time to a seamstress, but she did not take any interest either in books or needles; and as, moreover, the sneers of ill-bred children of wealthier parents at the poverty of her dress became a constant source of vexation for the

sensitive little girl, her father took her home and instructed her in the art of drawing. From her earliest childhood she displayed an intuitive love of nature, and after having studied for 4 years the works of the great masters at the Louvre, she returned, when the time came for a selection of the speciality of her art, to the predilections of her childhood, and the first works which she presented at the exhibition of 1841, were taken from natural history, and represented sheep, goats, and rabbits. She did not content herself with the ordinary studies of artists, but visited the butchers' shambles in Paris, in order to observe the nature of the animals. This accounted for her success. Since that time she has continued to send pictures of animals to the annual exhibition in Paris, as *Le cheval à cendre*, *Chevaux sortant de l'abreuvoir*, *Chevaux dans une prairie*. Her most successful works of that period were: *Les trois mousquetaires*, *Un troupeau cheminant*, *La rencontre*, *Un effet du matin*. In 1848 she exhibited a bull and a sheep, modelled by herself in bronze, and received from the hands of Horace Vernet the 1st class medal and a splendid Sèvres vase. Her master-work, *Le labourage Nivernais*, which was produced in 1850, attracted great attention at the exhibition, and received the honor of a place in the Luxembourg. She has since exhibited unfinished in Paris, *Vaches et moutons dans un chemin creux*, and *Le marché aux chevaux*. The latter picture was much admired at the French exhibition in London of 1855, affording to the critics a field for comparison with Landseer, and achieving wide-spread popularity in England under the name of the "Horse Fair." This remarkable picture was bought by M. Gambart, a French printseller of London, for \$8,000, and has since passed into the possession of Mr. William P. Wright, of Weehawken, N. J. Its recent public exhibition in New York was numerously attended and elicited great admiration. She studied 18 months on this picture, regularly attending the horse market in Paris twice a week. Her success extricated her father from his pecuniary embarrassments, by procuring him the post of director of the free school of design for girls in 1847, but he did not live long to enjoy his improved position, and died in 1849. The title of directress was then conferred upon Mlle. Bonheur, but the real head of the school is her sister Juliette, now Madame Peyrol, although Rosa goes there once a week, and exerts a good influence by her coöperation. Mlle. Rosa lives in a little secluded cottage, in the Rue d'Assas, near the Rue de Vaugirard, and regularly works 18 hours out of the 24, painting from 6 in the morning till night-fall, when she draws until past midnight. She possesses 2 horses, 5 goats, an ox, a cow, 8 donkeys, and sheep, dogs, birds, and poultry, which she uses as models. She has been of late engaged on a work illustrative of donkeys. Beside the works which have appeared at exhibitions, her portfolios are said to contain a fine collection of drawings and

sketches, which she has hitherto refused to sell. Her great force is in her faithfulness to nature. The boldness and independence of her own character inspire her pencil, and free her pictures from all conventionality. Beside the father and sister already mentioned, 2 brothers of Mlle. Bonheur have attained some artistic distinction, Auguste as a painter, and Isidore as a sculptor.

BONHILL, a village and parish of Dumbartonshire, Scotland, at the lower extremity of Loch Lomond, noted as the birthplace of Smollett. In 1851 it had a population of 7,642, mostly employed in the bleach fields and print works of the Leven valley.

BONI, a territory of the island of Celebes, and one of the principal states of the Bugis nation, bounded N. by Wajoo territory, E. by the bay of Boni, S. by Boolekumba and Bonthain, and W. by territories of Mangkasara or Macassar tribes; area, 2,850 sq. m.; pop. 90,000. This territory is mountainous, but, though contiguous to the great volcanic belt of the archipelago, exhibits no traces of volcanic action. Lompoo-Batang (great pillar), its highest peak, and the loftiest in Celebes, attains an elevation of 8,200 feet above the level of the sea. Lake Labaya, or, as called by the natives, Taparang-Danan, in the N. W. corner of this territory, is a beautiful sheet of water, 24 miles long and 18 broad, with an average depth of 6 fathoms, and abounds in fish. It is bordered on all sides by a luxuriant and richly diversified tropical growth, except at the mouths of the numerous little streams that empty into it, where clearings, and beautiful, picturesque little villages, attest the industry, skill, and civilized tastes of the Bugis people. This lake is enlivened by an active internal trade. More than a hundred sail of *padawakans*, or Bugis prahus, of an average burden of 40 tons each, have been counted upon its waters at one time, while numbers of them descend the Chinrana river, the only outlet of the lake, emptying into the bay of Boni, and proceed thence to the remotest points of the archipelago to collect pearls in the Arroo group, and tripang on the coast of New Guinea, or to obtain European products at Batavia and Singapore. This state is governed by a confederacy of nobles, who elect a sovereign from the patrician order, and generally a female. When Antonio Galvaon, the heroic Portuguese governor of the Moluccas, challenged the king of Boni to single combat to decide a personal difference, and save the blood of their men, the native prince, when in the field, quailed before the European and fled; but his sister, who, with his seraglio, accompanied the army, mounted a horse, and galloping forth, with lance in position, defied the European, whose gallantry was so moved as to retire at once from the territory of Boni. This girl was immediately elevated to the throne. The English, during their occupation of the Netherlands possessions in the archipelago, met with a spirited resistance to their encroachments from Arong Dato, queen

of Boni, who also gave great trouble to Gen. Van der Cappellen, the first Dutch governor-general after the British evacuation.—The capital, BONI, an inconsiderable native town, is near the shores of the bay, lat. 1° 37' S., long. 126° 32' E.

BONIFACE, the name of 9 popes of the Roman Catholic church. I. The successor of Pope Zosimus in 418. The emperor Honorius supported him by his aid in the pontifical chair against the archdeacon Eulalius. St. Augustine dedicated to this pontiff the 4 books which he wrote against the Pelagians. He died in Sept. 432. II. Succeeded Felix IV. in 529. In the *Epistola Romanorum Pontificum* there is a letter written by him to St. Cesarius of Arles. He died in 532. III. Succeeded Sabinianus in 607. He convoked a council of 72 bishops, in which certain laws were passed against making successors to popes or bishops during their lifetime. He died Nov. 10, in the same year. IV. Son of a physician of Valeria in the kingdom of Naples, succeeded Boniface III. The emperor Phocas gave him the Pantheon, which was built in honor of Jupiter and all the gods, by Marcus Agrippa. Boniface IV. changed it into a church, which he dedicated to the worship of God under the invocation of the blessed virgin and all the saints. He died in 615. V. A Neapolitan, succeeded Pope Deusdedit in 619. He died 625. He forbade civil judges to take away from the churches by force those who had sought there the right of asylum. VI. Pope after Formosus in 896, occupied the throne only 18 days. Having been uncanonically elected, he is considered as one of the anti-popes; his name is, however, left among the list of popes, in order that no change might be made in the chronological computations. VII. Also considered as an anti-pope, succeeded, in 974, Benedict VI., who died from strangulation. He was expelled after a month, but again occupied the see some months after the death of John XIV., when he died suddenly in the month of Dec. 984. VIII. Originally named **BENEDETTO GAETANI** born at Anagni, in the papal states, about 1228, died in Rome, Oct. 11, 1303. He was one of the most prominent personages in mediæval history, and his character and career have been the subject of much controversy, both within and without the Roman Catholic church. He finished his academic studies at the university of Paris, but is said to have subsequently studied the canon law at Bologna. About 1255 he visited England; in 1280 he went to Germany as secretary of a papal legate; in 1281 he was made a cardinal by Martin IV., who allowed him to receive the revenues of 12 benefices, 7 of them being in France and one in England. The honors and emoluments which he had received were accompanied, on the other hand, even in that epoch, by grave accusations of immorality and irreligion, which have since been set aside as unfounded. He was papal legate in France in 1290, while Philip the Fair, afterward his antagonist, was yet young; and he

discharged the same office in Sicily and Portugal. After the death of Nicholas IV., in 1292, the papal chair remained vacant for 27 months, but at last the conclave fixed upon a hermit 80 years old, of Sulmona, who became pope, July 5, 1294, under the title of Celestine V. He was incompetent to the office, and soon desired to abdicate, but doubts existed as to the legality of such a step. However, it was taken Dec. 18, 1294, and 11 days afterward Cardinal Gaëtani was chosen as his successor by the conclave assembled at Castelnuovo, near Naples. His entry into Rome was attended with extraordinary pomp, the king of Naples and the king of Bohemia holding the reins of his bridle, and serving him at table with their crowns on. His weak predecessor, Celestine, having manifested a disposition to withdraw his abdication, Boniface caused him to be put in confinement, as some have alleged, using great cruelty toward him, but as others maintain, and among them Cardinal Wiseman in his "Essays," treating him with kindness, until his death, May 19, 1296. Italy and Europe were at this time distracted by feuds and wars. While fierce factions threw the Italian states into confusion, there was strife between Adolphus of Nassau and Albert of Austria, in Germany, and between Philip the Fair of France, and Edward I. of England. Boniface increased the tumult of the times by publishing, in 1296, his famous bull, *Clericis laicos*, by which he forbade the clergy, under pain of excommunication, to pay without the consent of the holy see any subsidy or tax on any ecclesiastical property, and extended the excommunication to the emperors, kings, or princes who should impose such subsidy. In France, such imposts formed a considerable part of the royal income, and the vigor with which Philip the Fair, pressed by the necessities of his war with England, resisted the bull, and retaliated by forbidding any money to be exported from his kingdom to Rome, obliged the pope to retract, and to allow the taxes to be raised in France as before. He became soon after embroiled with the Colonna family, one of the most powerful in Italy, who had been dissatisfied with the abdication of Celestine, and denied the validity of the election of the new pope. Two members of this family, who were cardinals, were deprived of their dignities; they were all excommunicated, their descendants were condemned to civil degradation to the 4th generation, their castles and their city, Præneste, were totally destroyed, and Frederic of Aragon, whom they had supported, was ordered to renounce the title of king of Sicily, and to evacuate the island. The Colonnas took refuge in France. The war between France and England had involved almost every European power, and Boniface undertook to interfere as a superior authority. He censured the king of Denmark and his brother, forbade the king of Naples to treat with Frederic, elected king of Sicily, summoned to Rome Albert I., king of Germany, whose election as emperor he declared to be in-

valid without the papal sanction, rebuked Philip the Fair for his treatment of Guido of Flanders, and by special legates commanded the 2 principal contending kings to cease hostilities. There were new sources of discord between Philip and the pope, and, in Dec. 1301, the latter proclaimed the bull *Ausculta Dei*, and convoked a council of the French bishops at Rome to examine the conduct of King Philip, at the same time affirming it to be heretical not to believe that the king was subject to the pope in secular as well as spiritual affairs. The French nation, however, barons and clergy, opposed the pretensions of the pope, and supported their king; and it was formally declared by the 3 estates, that the king held his power in fief to no one, and in secular matters was subject to God alone. The bishops were forbidden to attend the council at Rome, which, therefore, was never held, and in 1302 the bull *Unam sanctam* affirmed the claims of the pope, setting forth that the church wields 2 swords, the spiritual and the secular, but that the secular is subordinate to the spiritual, and that therefore kings, who hold the former, are subject to the pope, who holds the latter. The bishops of France were again convoked under pain of excommunication, but Philip ordered the sequestration of the property of every one who should be absent from his diocese, and in his turn summoned a general council at Lyons to judge the pope. To this council the university of Paris and a large number of prelates adhered; the excommunication of Philip followed, April 18, 1303; and in June succeeding the assembled estates of France declared the pope a criminal and a heretic. The king sent Nogaret and Sciarra Colonna, one of the proscribed family, to Rome, with full power to seize the pope and bring him before the council of Lyons. They armed about 300 malcontent Italian nobles, surprised Anagni, the residence of Boniface, forced the palace, and seized the person, diamonds, and papers of the pope, and guarded him as a prisoner. Colonna is said to have struck the supreme pontiff a blow on this occasion, but the statement is disputed. After 8 days Boniface was rescued by the inhabitants of Anagni and taken to Rome, where he was protected in the Vatican by the Orsini; but the violent commotion he had gone through caused his death 35 days after his captivity. It was the lot of Boniface to count Dante among his enemies, and the fierce Ghibelline poet writes with partisan severity against the chief of the Guelphs. IX. PIETRO TOMACELLI, born in Naples, became successor of Urban VI., at Rome, Nov. 2, 1369, while the anti-pope Clement VII. resided at Avignon, died in Rome Oct. 1, 1404. He was a very handsome and accomplished man of the world at the time of his elevation, but not much skilled in the administration or laws of the church. He recognized Ladislas of Hungary as king of Naples in 1390, and celebrated 2 jubilees, in 1390 and 1400. The annates, or pecuniary contributions to the see of Rome,

which had before been occasional, he made perpetual, and decreed that archbishops and bishops nominated to benefices should pay to Rome one-half of their first year's revenue. He was twice expelled from Rome by the municipal authorities, and when, in 1400, his presence became necessary for the celebration of the jubilee, he refused to return till the Romans consented to the overthrow of the municipal government, promised obedience to a senate appointed by himself, and paid him a sum of money. From that time he ruled the city absolutely.

BONIFACE, a saint of the Roman Catholic church, born in Devonshire, England, about 680, died in Friesland, June 5, 755. His baptismal name was Winifrid or Winfreth. He is usually called the apostle of Germany, although centuries before him Christianity reached several branches of the Germans, as the Goths, Vandals, Burgundians, Longobards, and Gepides, from Byzantium. In fact, he had fore-runners in Kilian, Gallus, Columban, Fridolin, Emmeran, Swidvert, and Siegfried, among the western and northern tribes of Germany. At an early age he entered the monastery of Exeter, where he remained for many years, devoting his time to study and religious exercises; he then became professor of the theology, history, and rhetoric, at the monastery of Ntucell. After having already on a previous occasion visited the continent as missionary, he repaired in 716 to Friesland with the purpose of preaching the gospel there. Unable to accomplish his object on account of a war between the Frisians and the Franks, he returned to England and became abbot of his monastery. In 718 he went to Rome, and received from pope Gregory II. an apostolic mission to Germany. He now entered Friesland, where he preached during 8 years, then passed into Hesse (now the electorate) and founded there a monastery, which in the course of time became the city of Marburg and now remains as a university. In 728 Gregory II. called the apostle to Rome and consecrated him as a bishop, and on this occasion the name of Winifrid was changed for that of Boniface. In 732 Gregory III. bestowed on him the archiepiscopal dignity. In 738 he made a third journey to Rome, and was created legate of the holy see for Germany, over the whole of which country his apostolic jurisdiction was thus extended. He now erected various bishoprics, as Salzburg, Freising, Ratisbon, Passau, Erfurt, Buraburg (subsequently removed to Paderborn), Würzburg, Eichstädt, and several others. He also exercised a great influence over the last Merovingians, and over Carloman and Pepin, the founders of the new dynasty, but was opposed to the decisions of Pope Zacharias, which confirmed the Carolingian usurpation. He, however, was named archbishop of Mentz by Pepin, and the bishoprics of Tongers, Utrecht, Cologne, Worms, Spire, with others previously founded, came under his jurisdiction. He founded the celebrated abbey of Fulda, and those of

Fidislar, Hammelburg, and Ordorf. Boniface finally gave up his see of Mentz, in order to be better able to preach the gospel to the heathen Frisians. In one of his peregrinations across the savage and uncultivated country where now is Dokkum, near Leeuwarden, he was attacked by the barbarian natives and slain, together with some 50 of his converted companions, whom he forbade to use any means of defence. Boniface participated in 8 councils, himself called several diocesan synods, and there remain 89 letters written by him. His body was buried in Utrecht, afterward in Mentz, and finally in Fulda, where a copy of the Gospels in his handwriting is still preserved. Christianity had been introduced among the Germans before him; but he is believed to have been the first to bring in the organization of the church of Rome. He is said to have departed from the example of preceding missionaries by asking for Roman authority to become a missionary among the heathen; and also to have been the first of German or Frankish bishops to swear fealty to the pope. He preached the supremacy of the Roman pontiff over the civil power of the state. The right to establish bishoprics and to nominate bishops, which the Roman emperors had exercised since Constantine, was likewise enjoyed by the kings of various northern tribes after their conversion to Christianity. The Merovingians used this right, and after them the Carolingians. Boniface, however, transferred it from the kings to the popes, instead of restoring it to the free election of the diocesans, or the chapters. He was also the first to set on foot the contest for papal investiture which, about 4 centuries afterward, under the Frankish emperors and the popes, and especially under Gregory VII., occasioned so much bloodshed. In his hands, however, it produced no such result, as he conducted it with success in the exclusive interest of the hierarchy. The most complete edition of his *Epistola* appeared at Mentz, in 1789. A monument was erected to him in 1811, on the spot (near the present village of Altenberga, in Thuringia) where the first Christian church had been built by him in 724. Another monument was erected in his honor at Fulda, in 1842.

BONIFACIO, STRAIT OF, between Corsica and Sardinia, is named from the Corsican town of Bonifacio, about 7 miles wide in the narrowest part. The land is mountainous and the shores steep on either hand. Several small islands stand at the eastern entrance. The strait is difficult of navigation. Corals abound here.

BONIN ISLANDS, a group of 70 islands and 19 rocks in the north Pacific, composed of 3 small clusters, named by Capt. Beechey, the arctic traveller, in 1827, Parry's group (northern), Baily's group (southern), while to the islands of the middle cluster he gave separate names, viz., Peel, Buckland, and Stapleton. These islands have long been visited, or at least Peel (the only one inhabited), by whalers for supplies. From 1675 to 1725 they were

used by the Japanese as penal colonies. In 1826 the first settlement was made by 2 sailors, and in the same year Capt. Beechey arrived to take possession of the islands for the English crown. In 1853 Commodore Perry, of the United States navy, recommended the purchase of Port Lloyd, on Peel island, as a depot for steamers between China and California. By the treaty of 1854, Port Lloyd, and a port on the Loo Choo group, about 1,000 miles to the west of the Bonin group, and 400 miles from the China coast, are open for American and British shipping. The treaty was effected on the part of this government, March 31, 1854, and on the part of the British, Oct. 14 following. Until that time Japanese ports were only open to Dutch and Chinese vessels. The Bonin islands are volcanic; the water around them is very deep, and the shores precipitous. Timber is scarce. The few inhabitants, chiefly natives of the Sandwich islands, adopted a constitution, Aug. 28, 1853, and are ruled by a magistrate, who is elected for 2 years. They were supplied with seeds by Commodore Perry for agricultural purposes, in 1853, and have about 130 acres of land under cultivation. Peel island contains a good harbor, and the only village of the whole group, called Boyd.

BONINGTON, RICHARD PARKES, an English painter, born at Arnold, near Nottingham, Oct. 25, 1801, died in London, Sept. 23, 1828. His father, who was an artist, observed and encouraged his desire to become a painter. At the age of 15, his parents having removed to Paris, he became a student of the institute, and made several beautiful copies of the best Flemish and Italian landscapes in the Louvre. His chief productions were representations of coast scenery, and fish markets. The first drawing of his exhibited at Paris, was sold as soon as seen when the exhibition opened; for the second, a marine subject, he received the gold medal. Thus distinguished, he went to Venice. The picturesque beauty and grandeur of that city fascinated him, and he made many sketches. He chiefly painted in water-colors. He went to England in 1827, but he speedily returned to Paris, where he passed the winter. Early in 1828 he again went to London, and several of his paintings were in the royal academy exhibition of that year. Though badly placed there, they were much admired. He has the merit of having revived the estimation for water-colors in France, after they had been neglected for 20 years.

BONITO, a name given to several scomberoid fishes of the genera *thynnus*, *auxis*, and *pelamys*. The bonito of the tropics, so celebrated for its pursuit of the flying-fish, is the *thynnus pelamys* (Linn.). Its range is extensive in the tropical Atlantic, and it probably extends to the Pacific and Indian oceans. It has the graceful form, habits, and activity of the common tunny, but it is much smaller, rarely attaining a greater length than 2½ feet; the color of the back and sides is a brilliant steel

blue, with green and pink reflections; the belly is silvery, with 8 brown longitudinal bands, 4 on each side, extending from the throat to the tail. Its food is principally small fish, the higher mollusks, and sometimes marine plants; it is readily taken by the hook, and its flesh, though dry and occasionally injurious, is considered by mariners as a luxury. The *T. corellis* (Cuv.) is also called bonito in the West Indies. The bonito of the Mediterranean is the *auxis vulgaris* (Cuv.), resembling the mackerel in the separation of the dorsal fins; the color of the back is blue, with irregular lines and spots of a blackish blue on the sides; the average length is 15 inches, and the weight rarely exceeds 6 lbs. The bonito of the New England fishermen is the *pelamys sarda* (Bloch.), called also skip-jack; its genus differs from the tunny only in having separate, pointed, and strong teeth; the color of the head and upper parts is a greenish brown, the sides lighter, and the belly silvery white; 10 or 12 dark-colored bands pass obliquely downward and forward from the back toward the sides, sometimes as low as the abdomen; the lateral line is rather undulating; it is rarely more than 2 feet long; it is found in the Mediterranean, and in the temperate regions of the Atlantic, from the Cape Verde islands to the American coast; it is considered good eating in the Mediterranean. The *P. chilensis* (Cuv.) of the Pacific coast of South America is also called bonito. This term is Spanish, meaning "pretty," and is doubtless applied to many other species of fish.

BONJOUR, two brothers of this name, natives of Pont d'Ain, department of Ain, in France, and the founders of a new sect somewhat similar to the Flagellants of the 13th century, flourished in the last half of the 18th century. They were educated for the church, and the elder held at first a curacy in the ancient province of Fours. In 1775, being censured by his parish and bishop for his opinions, he resigned this curacy, and was appointed to that of Fareins, of which his brother was made vicar. Eight years afterward, the elder brother resigned the curacy to the younger, alleging himself to be unworthy of the office. He soon acquired a reputation for working miracles, and attached to himself a number of followers, mostly women and young girls, who called him their *petit papa*. They held to community of goods, which excited a very strong popular sentiment against them. One of their most prominent opponents being found dead in his bed, by the prick of a needle, the elder Bonjour was exiled, and his brother imprisoned in the convent of Toulay, from which he escaped, as he alleged, by the intervention of an angel. The revolution of 1789 encouraged Bonjour to return to Fareins, and in the absence of the curate and vicar he took possession of his church, and issued orders to his followers, who rallied around him. He was, however, soon dislodged from his occupancy, and under the consulate exiled to Lausanne with his brother,

where they both died in extreme poverty; their sect perished with them.

BONN (anc. *Bonna*), a city of Rhenish Prussia, 15 miles from Cologne, well known to the literary world by its university, and to tourists by its picturesque situation; pop. in 1855, 18,200. Bonn was fortified by the Romans. In the first centuries after Christ, it was frequently laid waste by wars. Rebuilt in the 4th century by the emperor Julian, it was injured in subsequent contests with the Huns, the Franks, the Saxons, and the Normans. In 1678 it was the theatre of the victory of the French over the combined Dutch, Spanish, and Austrian forces. In 1689 the town was bombarded and captured by Frederic III. of Brandenburg. In 1703 it fell into the power of Holland, and was not recovered until 1715. By the treaty of Luneville it was annexed to France in 1802, but was allotted to Prussia by the congress of Vienna in 1814.—The university was founded in 1786, but suspended during the French dominion, used as a lyceum in 1802, and received its charter as a university at Aix la Chapelle, Oct. 18, 1818. It receives from the government an annual grant of 100,000 thalers, and in addition derives from its own resources an income of about 8,000 thalers. The annual salary of the professors absorbs 60,000, and the support of the scientific institution 25,000 thalers. The university buildings are, perhaps, the finest and most extensive in Europe; they were formerly used as a palace by the electoral princes of Cologne, and were presented by Frederic William III. to the faculty. They contain the lecture-rooms, the library of more than 140,000 vols., the cabinet of antiquities, the archaeological collection, the cabinet of natural history, the clinical institutions, and a riding academy in the basement. The university possesses also a distinct building for anatomy, while the zoological and mineralogical galleries, the botanical gardens, and the new agricultural academy, are at Poppelsdorf, a mile distant. The observatory is half way between Poppelsdorf and Bonn. A Sanscrit printing-press was established in connection with the university, under the auspices and the direction of A. W. von Schlegel. Catholic and Protestant students have separate divinity schools. The number of students, of whom about $\frac{1}{4}$ are foreigners, was 881 in 1849, 1,026 in 1851, and 852 in the winter session of 1857-58. The number of professors and teachers is about 100. Bonn exhibits more refinement of tone than many other German universities. In the cemetery of Bonn is a monument of Niebuhr, who died here in 1831; to Beethoven, who was born here, a monument was erected on the Münster place in 1845.

BONNARD, JEAN LOUIS, a French missionary, born March 1, 1824, died in Tonquin, April 30, 1852. He reached Tonquin in March, 1850; learned the language while rendering assistance to the natives during the ravages of the cholera, but had hardly begun to preach when he

was arrested, together with his associates. At his trial he succeeded in obtaining the acquittal of 2 young Christians, but was himself executed.

BONNER, EDMUND, an English prelate, born at Hanley, in Worcestershire, about the end of the 15th century, died in the Marshalsea prison, Sept. 5, 1569. He was the son of a peasant, and was, by what circumstance it is not known, educated at Pembroke college, Oxford, where, in the year 1525, he was made a doctor of the canon and the civil law. Owing to his business talents, he was patronized by Wolsey, who gave him several clerical appointments; and, after the fall of that remarkable man, he obtained the favor of Henry in a high degree, and was sent by him to Rome, to advocate with the pope his divorce from the queen, and afterward personally to present his appeal, and read it aloud in the presence of the pontiff. In performing these duties, he conducted himself with so much zeal and intemperance as to provoke the indignation and even the personal anger of the pope to such an extent that, as common report goes, probably without any foundation, he was threatened with being thrown into a caldron of boiling lead, on which he prudently returned to England. In 1538 he was appointed bishop of Hereford, while he was on an embassy to Paris, by a commission which caused him to receive the title, as if in derision, of the king's bishop, as he, in fact, by accepting it, acknowledged that he was a prelate only during the pleasure of the king, and that his power of consecrating priests should terminate whenever called on by him to resign it. His consenting to this degradation, as it was considered, of his episcopal dignity, while it secured to him the highest approbation of the king, gave great scandal to the ultramontane churchmen. At the time of his nomination to this see, he was ambassador at Paris; and previous to his consecration, was translated to the more important see of London. He was subsequently sent to Madrid as ambassador to Charles V., which high office he was filling with ability at the time of Henry's death. The important change made, in that reign, by the reformation, was transferring the papal power from the pope of Rome to the king of England, who, by the supremacy act, intended to become, and did, in effect, actually become, for the term of his own life, the pope of England, and, by virtue of his office, burned Protestants for denying the real presence, while he only hanged the Roman Catholics who denied his supremacy and infallibility. On the accession of Edward VI., however, the matter was altered, his uncle, the earl of Hertford, who procured himself to be appointed protector, and created duke of Somerset, as well as the marquiss of Essex, brother to Henry's last wife, Catharine Parr, being both ardently attached to the doctrines of the new learning, as it was called, and zealous to render it the established religion. In this they were strenuously aided by Crammer, Holgate, bishop of York, Holbeach of Lincoln,

Goodric of Ely, and, above all, Ridley of Rochester, who proceeded to create visitors, who should go over all England with articles and injunctions prescribing the forms of worship, the articles of faith, and every thing relating to church discipline, and, among other things, commanding the removal of images from churches, and absolutely prohibiting their use. "Bonner and Gardiner showed some dislike of these injunctions, and Bonner received them only under protestation that he would observe them, if they were not contrary to God's law and the ordinances of the church. Upon which Sir Antony Cook, and the other visitors, complained to the council. So Bonner was sent for, where he offered a submission, but full of vain quiddities—so it is expressed in the council book. But they not accepting of that, he made such a full one as they desired, which is in the collection. Yet, for giving terror to others, he was sent to lie for some time in the prison called the Fleet." Such is Burnet's account of his first imbroglia with the council of Edward VI., which has been represented as if it were inconsistent with his strenuous, and even intemperate, advocacy of the measures of the late reign. It was, however, clearly not so; since the only important change in Henry's church was the making it dependent on himself, and not on the bishop of Rome. Some time after this, he was cited before a commission, appointed to examine into certain points of his preaching, especially into his alleged denial of the supremacy of the king, during the sitting of which he conducted himself with singular violence and intemperance of language, in which, says Burnet, he called the witnesses "geese and woodcocks, dunces and fools, and behaved himself more like a madman than a bishop." For this conduct, and for the matter of which he stood accused, whereof he was found guilty as by contumacy, he was deposed from his sacred office, and committed to the Marshalsea. His conduct during his confinement was so wild and furious, that it seems to justify a suspicion of his insanity. There is an extraordinary letter of his, written to his dearly beloved friend, the worshipful Richard Lechmore, from the Marshalsea prison, preserved in Burnet's collection of records, in which he says, "But if amongst you I have no puddings"—to request a supply of which dainties, and of pears, is the gist of the letter—"then must I say, as Messer, our priest of the hospital, said to his mad horse, '*Al diavolo, al diavolo, ai tutti diavoli*.'" The commission consisted of Oranmer, Ridley, the 2 secretaries of state, and Dr. May, dean of St. Paul's, and it tells ill for Bonner, that the 2 former suffered martyrdom under his jurisdiction, and that, when called upon to degrade Oranmer, he did so with such insolence and exultation, as to elicit the remonstrances of his colleague Thirleby. He lay in prison, constantly refusing to make submission, until the accession of Mary, 1553, when he was released from durance, and reinstated in his bishopric, by special commission. On the revival of the cere-

monies and ritual of the old church, and the reestablishment of the papal authority, he was extremely active in bringing about both measures. At various times he fell into such fits of fury, and conducted himself with such outrageous violence, that one might almost suppose that persecution had made him mad. In one instance, at a visitation at Hadham, having arrived somewhat unexpectedly before the bells had begun to ring, and finding that there was no sacrament hanging up, nor any rood set up, not content with abusing the priest most unclerically, reaching "at Dr. Bricket—that was the parson's name," says Burnet—"to beat him, he misguided the stroke, which fell on Sir William Josselyn's ear, with great force. Fecknam, then dean of St. Paul's, in Dr. May's room, studied to appease Josselyn, and said to him, that the bishop's being so long in the Marshalsea had so disordered him, that in his passion he knew not what he did; but when he came to himself he would be sorry for what he had done. Josselyn answered, he thought, now that he was taken out of the Marshalsea, he should be carried to Bedlam." In the persecutions which followed, he assuredly took a prominent and leading part, and his metropolitan diocese was the scene of most of the acts which render the memory of Mary so odious. It has been assumed and asserted, that Bonner was the instigator of these acts; that he was voluntarily, unnecessarily, and obtrusively insolent and cruel in his cruel office; that he delighted in witnessing, and some even say, in inflicting torture, whipping persons with his own hand, and, in one instance, burning a wretched prisoner with a candle, in order, as he is reported to have said, to give him a taste of what he would come to. It is to be hoped, for the sake of human nature, that these are exaggerated accusations of men maddened by oppression and suffering; and, while the general tone and temper of Bonner's mind do not seem averse to the charge, it may be said that the excessive odium in which he was held, in his own time, leads to the belief that his cruelties would, at least, lose nothing by report; and it certainly does appear in his favor, that he was reprimanded by his mistress, and by the Spanish tyrant whom she had married, because, as Burnet admits, "Bonner himself became averse to the severities, and complained that the matter was turned over upon him, the rest looking on, and leaving the execution of these laws wholly to him;" which does not look like the fiendish exultation in blood-shedding which is ascribed to him. On the accession of Elizabeth, he went with the other bishops to meet the queen at Highgate, but she averted her head, in unconcealed disgust, at his approach, although he continued unmolested, and even retained his office, until on refusing the oath of supremacy he was deposed, and shortly afterward returned to his old lodgings in the Marshalsea, where he remained a prisoner until the day of his death, in 1569. It was alleged against him, "that he had

in many things, in the prosecution of those that were presented for heresy, exceeded what the law allowed; so that it was much desired to have him made an example." But Elizabeth firmly refused to agree to any act which could either savor of revenge, or tend to impair the authority of *de facto* governments and princes, by the infliction of punishment on the executors of the laws, which, however barbarous and unholy, were laws duly enacted by the houses of parliament, and sanctioned by the crown. At the period of his death, so bitter was the hatred against him, on the part of the London populace, before whose eyes his cruelties had been in the main enacted, that it was found necessary to bury him at midnight, in order to prevent the danger of a tumult, or of violence to his remains.

BONNET, in fortification, a transverse elevation of the parapet, or traverse and parapet, used either to prevent the enemy from seeing the interior of a work from some elevated point, or, in barbetta batteries, to protect men and guns from flanking fire. In these latter batteries, the guns firing over the crest of the parapet have to be placed on high traversing platforms, on which the gun-carriage rests, recoils, and is run forward. The men are, therefore, partly exposed to the fire of the enemy while they serve the gun; and flanking or ricocheting fire is especially dangerous, the object to be hit being nearly twice as high as in batteries with embrasures and low gun-carriages. To prevent this, traverses or cross parapets are placed between the guns, and have to be constructed so much higher than the parapet, that they fully cover the gunners while mounted on the platform. This superstructure is continued from the traverse across the whole thickness of the parapet. It confines the sweep of the guns to an angle of from 90° to 120°, if a gun has a bonnet on either side.—BONNET-À-PÊTE, or QUEUX D'HIBONDELLE (swallow tail), in field fortification, is an intrenchment having 2 salient angles, and a reëntering angle between them. The latter is always 90°, the 2 salient angles mostly 60°, so that the 2 outer faces, which are longer than the inner ones, diverge to the rear. This work is sometimes used for small bridge heads, or in other situations where the entrance to a defile has to be defended.

BONNET, CHARLES, a Swiss naturalist and philosopher, born at Geneva, March 18, 1720, died there June 20, 1798. His ancestors were driven out of France by the religious persecution of Protestants in 1573, and emigrated to Geneva, where they held high places in the magistracy. He was destined to pursue the same career, had his inclinations not been drawn in another and a different direction, by reading the works of Réaumur and of Pluche on the natural sciences. The results of his first observations and experiments were published in his 20th year, and were deemed worthy of a man of science. The experiments of Trembley

on the reproduction of certain polyps by means of incision and bisection, induced Bonnet to make similar experiments on other types of organization, and he found that certain so-called worms could be multiplied by the same process. He also discovered that several generations of aphides are produced by a viviparous succession of females, without males. He thought, even, that the aphides are always viviparous, and never lay eggs; what are commonly called eggs, produced in autumn, after the appearance of both males and females, being a sort of cocoon, consisting of the young aphid enclosed in an envelope; and other naturalists, on observing the habits and characteristics of the *aphis quercus*, agree with Bonnet in this view. He made some curious experiments on the respiratory organs of caterpillars, and described the structure of the tape-worm. These and other important studies of a kindred nature, were published in his *Traité d'insectologie*, which appeared in 1745. Nine years later, in 1754, he published a second work of some importance, in which he treats of vegetable physiology, and particularly of the functions of the leaves of plants. His studies on organized bodies (*Considérations sur les corps organisés*) were published between the years 1762 and 1768, in which he collects together and compares all the best-ascertained facts and opinions on their origin and modes of reproduction. He endeavors to refute the ideas of Buffon, and the so-called epigenesists, and to establish an opinion of his own, with regard to the origin and reproduction of organic forms of life. His opinions on these secrets of nature have been deemed, however, not less vague and problematical than those which he rejected. By the failure of his sight from excessive application, he was, in some measure, driven from the field of observation, where he had been successful, to that of speculative contemplation. His *Essai de psychologie*, published in 1754, and his *Essai analytique des facultés de l'âme*, 1760, are nevertheless remarkable productions. He believes the soul to be immaterial and immortal, and, while in the body, to occupy the brain alone, influencing the whole organism through the nervous system. The same ideas are pursued still further in his *Contemplation de la nature*, published in 1764-'65, wherein he endeavors to construct a chain of nature, beginning with the lowest atom of organic being, and gradually rising through successive types of organism, from the vegetable to the lowest forms of animal, and from these again to man, and so on to superior beings, angels and archangels, *ad infinitum*, ending only in the Deity, as the beginning and the end of all things. His *Palingénésie philosophique* was published in 1770. In this work he puts forth the idea that the souls of animals are immortal, as well as those of men; but that they undergo some transformation at the hands of the Creator, which causes them to rise progressively in the scale of being. In 1778 he pub-

lished a work on religion, entitled *Recherches philosophiques sur les preuves du Christianisme*, in which he defends revelation against those who impugn its veracity and authenticity. The complete works of Bonnet were published in 8 vols. 4to, at Neufchâtel, in 1779-1788; and again, with illustrations, in 18 vols. 12mo, in 1788.

BONNEVAL, CLAUDE ALEXANDRE, comte de, an adventurous French officer of noble descent, born at Coussac (Limousin), July 14, 1675, died in Constantinople, March 27, 1747. He bought a commission in the French guards, 1701, became a colonel of infantry, and served with Vendôme; quarrelled with the accounting officers and the minister of war; and in 1705 and 1706 travelled in Italy, and entered the service of the emperor of Austria as a major-general. In the attack on Turin, he saved the life of his own elder brother, who had been made a prisoner. He accompanied Prince Eugene in his campaigns in Flanders, and fought 2 strange duels during the negotiations at Utrecht, one with a Frenchman, for saying that Louis XIV. aspired to universal monarchy, and the other with a Prussian for saying the contrary. Having gone to Paris in 1717 to sue out his pardon before the parliament, his mother married him to Mlle. de Biron, whom he left 10 days after the ceremony, and never saw again. He returned to Eugene's army, and obtained an important command in Sardinia and Sicily in 1719, but got into difficulty, was sent to his regiment at Brussels, fought several duels, and fled into Holland, where he was imprisoned in the citadel of Antwerp. Thence he went to Vienna, where he was stripped of his rank and exiled. He went subsequently to Venice, to Bosnia, and finally turned Turk, in 1724. Subsequently, acquiring fame under the name of Achmet Pasha, he attempted to organize the Turkish army after the European system, fought with distinction against Russia and Persia, and finally was appointed by the government to important offices. But his rapid advancement excited much jealousy, and the sultan sent him into exile; when the pope offered him a refuge at Rome, and the king of the Two Sicilies a pension. A galley was sent for him, but he died before he could escape. Many memoirs were written of his life; those published by the prince de Ligne, in 1817, are considered the most authentic.

BONNEVILLE, BENJAMIN L. E., a colonel in the United States army, born in France, a cadet at West Point in April, 1818, a brevet 2d lieutenant of light artillery, Dec. 11, 1815, was transferred with the same rank to the 8th infantry, March 12, 1819. Oct. 4, 1825, he became a captain, but was dropped from the rolls, May 31, 1834, having, while on furlough, gone on an expedition in the prairies, and not been heard from for a longer time than the regulations allowed. Having returned, however, he was made a major by brevet, July 15, 1845;

brevet lieutenant-colonel, Aug. 20, 1847, for gallant conduct at Ohurubusco and at Contreras, in Mexico; and lieutenant-colonel of the 7th infantry, May 7, 1849. He is the author of a "Journal of an Expedition to the Rocky Mountains," from the materials of which Washington Irving has written a most interesting book of western life.

BONNIVARD, FRANÇOIS DE, a Genevan chronicler and politician, born 1497, died about 1571. An incorruptible opponent of the schemes of the duke of Savoy for conquering Geneva, he was, in 1530, arrested by the agents of Savoy, and imprisoned in the dungeons of the castle of Chillon. This event is the subject of Lord Byron's poem, entitled the "Prisoner of Chillon." He was restored to liberty 6 years later, Geneva having become free and reformed. He was employed from 1546 to 1552 in writing the chronicles of Geneva, from the time of the Romans to 1530. He was versed in Latin literature, in theology, and history, and left several works, which have remained in manuscript.

BONNY RIVER, one of the arms of the Niger, enters the bight of Biafra at its delta between the Old and New Calabar rivers. Near its mouth is Bonnytown, which was a place of great resort for slavers some years ago, and it is estimated that at one time as many as 20,000 slaves were annually sold there. Of late the traffic has greatly decreased, but it is supposed that 2,000 slaves are still exported from Bonny river every year. The British procure here large quantities of palm oil, and the trade in this commodity has increased in proportion to the diminution of the slave trade. The country around Bonny river is low, flat, swampy, and very unhealthy.

BONNYCASTLE, JOHN, an English mathematician, died at Woolwich, May 15, 1821. He was for more than 40 years one of the mathematical masters at Woolwich, and published introductions to arithmetic, algebra, astronomy, geometry, and trigonometry, an edition of Euclid's "Elements," and a general history of mathematics from the French of Bossut.—**CHARLES**, son of the preceding, first professor of natural philosophy in the university of Virginia, born at Woolwich, in England, died at Charlottesville, Va., in Oct. 1840. He travelled with Lord Pomfret, assisted his father in preparing mathematical text-books, wrote various articles for cyclopædias, and when the university of Virginia was founded was selected to occupy in it the chair of natural philosophy. He arrived in this country in 1825, was transferred to the professorship of mathematics in 1827, and was the author of a treatise on "Inductive Geometry" and of several memoirs on scientific subjects.

BONOMI, GIUSEPPE, an Italian architect, born at Rome in 1739, died in England, March 9, 1808. He went to England in 1767, and, with the exception of 1 year in Italy, passed the rest of his life there. He was elected an asso-

diate of the royal academy, but, notwithstanding the exertions of Sir Joshua Reynolds, could not succeed in becoming an academician. The mansion at Roseneath, in Dumbartonshire, for the duke of Argyll, is his masterpiece.

BONONCINI, or **BUONONCINI**, **GIOVANNI BATTISTA**, an Italian composer, born at Modena in 1672, died about 1750. His proficiency on the violoncello gained him admittance into the band of the emperor Leopold at Vienna, where, at the age of 18, in emulation of Scarlatti, he wrote an opera called *Camilla*, which was favorably received. In England, for several years, scarcely any opera was tolerated which did not contain some of Bononcini's airs, and upon the almost simultaneous arrival of himself and Handel in London, notwithstanding the superiority of the latter, 2 parties, the one for Bononcini and the other for Handel, were formed, between whom an exciting contest was waged for several years. Gradually, however, Bononcini's popularity waned, and having been detected in an act of musical plagiarism, he left England in 1733, found his way to Paris and Vienna, and finally went to Venice, where all traces of him are lost.

BONPLAND, **AMÉ**, a French traveller and naturalist, born at La Rochelle, Aug. 22, 1773. His father was a physician, and the son studied the same profession, but before he had completed his studies he was called by the revolutionary authorities into the naval service, and acted as surgeon on a man-of-war. When peace was restored he went to Paris, and became a pupil of Corvisart, and a friend of Alexander von Humboldt, who was his fellow-student, to whom he taught botany and anatomy, receiving in return instructions in physics and mineralogy. Bonpland was the companion of Humboldt in the long and famous scientific journey described in Humboldt's "Voyage to the Equinoctial Regions of the New World." On his return, after an absence of 5 years, Bonpland presented his collections to the government, and the emperor granted him a pension. Having presented to the empress Josephine a collection of flower seeds from the West Indies, they were planted at Malmaison, and as Bonpland went thither weekly to attend to them, the empress became acquainted with him, and conferred on him the place of intendant of Malmaison, which then was vacant. Made more comfortable in his circumstances, he devoted himself to the publication of his travels, and became intimate with Gay-Lussac, Arago, and the leading scientific men of his day. When Napoleon was dethroned, Bonpland advised him to retire to Mexico, and there watch the course of events. He was at the bedside of Josephine when she died. He then returned to America, sailing from Havre in 1816 for Buenos Ayres, where he was for a time warmly welcomed. Soon, however, the new government became jealous of him, and he again set out on his travels, intending to cross the pampas, the province of

Santa Fé, Chaco, and Bolivia. On this expedition he visited the old missions of the Jesuits in Paraguay, where he was arrested by the agents of the dictator Francia in 1821, who detained him in the country, forbidding him to visit Assumption, and forcing him to support himself by the practice of medicine in an Indian village. In this condition he remained for 10 years, until Feb. 2, 1831, when he returned to Buenos Ayres. He afterward married an Indian woman, and retired to a plantation near Borja, in Uruguay. Bonpland has written voluminously and delightfully on the natural history of the Antilles and South America. One of the most beautiful works ever printed is his *Nova Genera et Species Plantarum*, 12 vols. folio, with 700 colored plates (Paris, 1815-1829).

BONSTETTEN, **CHARLES VICTOR DE**, a Swiss author, born at Bern, Sept. 3, 1745, died in Geneva, Feb. 8, 1832. Previous to the revolution he held various public offices, and was celebrated for hospitality to literary men. Subsequently he resided in Italy, and for several years at Copenhagen with his friend Frederica Brun. The latter part of his life was mostly spent in Geneva. He was personally acquainted with Jean Jacques Rousseau, whose writings and conversation had a powerful effect in stimulating Bonstetten's enthusiasm for social questions. Some of his writings are in the German, and others in the French language. His principal works are *Recherches sur la nature et les lois de l'imagination* (Geneva, 1807), and *Etudes de l'homme* (Geneva, 1821).

BONTEKOE, **WILLEM ISBRAND**, a Dutch navigator, noted for his miraculous escape from a fire which destroyed the *Nieuw Hoorn*, a vessel under his command, bound, in 1618, from Holland to the East Indies. While striving to extinguish the fire, which broke out on the vessel's arrival at Batavia, 66 of his crew deserted him, the other 184 perished, and the captain seizing a spar which was floating in the water, reached the long-boat, upon which the deserting crew had made their escape. They arrived at Sumatra in 14 days, were driven off by the natives, put to sea again, and finally returned in safety to Batavia. The captain, who subsequently took a part in the war in China, under Cornelis, in 1681, wrote an account of his adventurous voyage, which was published at Amsterdam.

BONTHAIN, a state of the Macassar nation, in the S. W. peninsula of Celebes; separated on the N. by Mt. Lampoo-Batang from Boni, bounded E. by Boolekumba, W. by Tooratea, and S. by the Java sea. The town of Bonthain, in lat. 5° 32' S., long. 121° 52' E., is the residence of a Dutch *genaghebber*, or superintendent. This territory, along with that of Boolekumba, was wrested from the Macassar nation, after a spirited resistance, in 1824-'25. The country is very mountainous. On the table lands in the vicinity of Lampoo-Batang, and at elevations of 3,000 and 4,000 feet, there is a cool, invigorating, temperate climate; and in the soil of this re-

gion the common potato, turnips, cabbages, and other products of our kitchen gardens, have been cultivated in perfection. The town of Bonthain is connected with the free port of Macassar by an excellent post road 50 miles long.

BONVICINO, ALESSANDRO, called IL MORETTO, an Italian painter, born at Brescia about the commencement of the 16th century, died in 1564. He studied with Titian at Venice, and was among the first to introduce the style of that master into Brescia. He caught with great success the coloring and expression of Titian's works, particularly in his portraits. Subsequently he adopted an entirely new style, very much after the manner of Raphael, which is so rich and attractive that, according to Lanzi, many dilettanti have gone out of their way to visit Brescia and see his pictures. While in brilliancy and freshness of coloring, in the arrangement of his draperies and other accessories, he shows the influences of the Venetian school, his noble and expressive figures have much of the fire and grace which may be seen in Raphael.

BONZES (from the Japanese, term for the pious), generally applied to the priests of Fo or Buddha, in China, Japan, Coochin China, Burmah, &c., without regard to the sectarian distinctions existing among them. Though differing in many minor points of doctrine, they may be said to teach one fundamental creed. The various sects hate each other cordially, but have many customs in common. They profess celibacy, practise austerities of various kinds, and dwell together in monasteries. They shave the head and beard, never cover the former, even in the severest weather, preserve a profound silence in public, and are supposed to lead a life of continual prayer and contemplation. They frequently have idols of hideous form, which they honor with many superstitious rites. To instruct or improve the masses forms no part of their occupation, and would, doubtless, be beyond their ability. Their avarice is equal to their ignorance. No opportunity for extorting money from the people by the sale of charms, trifles of various sorts, and paper robes, which are worn by the dying, and supposed to secure admission to paradise, is ever neglected. They sell even their prayers, and their sermons usually close with an earnest exhortation to the multitude to make their peace with God by being liberal to his ministers. The religion of Fo does not admit priestesses, but there are female devotees called *biconis* or *bonies*, who live in communities under a superior of their own sex, and profess the same virtues and way of life as the priests. The education of females is often intrusted to them. There are some monasteries in which the devotees of both sexes reside, and temples in which they chant their prayers together, the men on one side, the women on the other.

BOOBY, the English name for a genus of *pelecanida*; *dysporus* of Illiger, *morus* of Vieillot, *les fous* of the French; separated from the true

pelicans by Brisson, under the name of *sula*. The term booby is applied by navigators to that species (*sula fusca* of Brisson) which inhabits the desolate islands and coasts of warm climates in almost every part of the globe. All the old voyagers have left accounts, perfectly consentaneous, concerning the stupidity of these birds. Bligh, Dampier, De Gennes, the vicomte de Querhoent, and many others, testify to the passive immobility with which they sit in rows, 2 and 2, along the shores, and suffer themselves to be beaten to death with clubs, attempting only a weak defence by pecking at their aggressors, and never making so much as an effort to take wing. Dampier says that in the Alacran islands, on the coast of Yucatan, the crowds of these birds were so great that he could not pass their haunts without being inconvenienced by their pecking. He also states that he succeeded in making some fly away by the blows which he bestowed on them; but the greater part remained, in spite of all his efforts to compel them to take flight. The boobies seldom swim and never dive, but take the fish, which is their prey, by darting down from on high, with unerring aim, upon such kinds as swim near the surface, and instantly rising again into the air with their booty. In the performance of this exploit they are cruelly harassed and persecuted by the frigates, or man-of-war birds (albatrosses), which give chase to them the instant they see them rising laden with their prey, and force them to disgorge it, when they themselves appropriate the meal, deterred by no delicacy of appetite. This story has been denied, but the weight of evidence confirms it; and, recognizing the similar habit of the white-headed eagle toward the osprey, of the great arctic gull toward the fishing terns, and of other predatory birds toward their more industrious and peaceful congeners, there is no cause for doubting its truth. They walk with extreme difficulty, and while at rest on land stand nearly erect, propped, like the penguins, on the stiff feathers of the tail. It is suggested by naturalists that the absence of the common instinct of self-preservation in this bird is to be attributed not to stupidity, but to inability to get away, the extreme length of its wings and comparative shortness of its legs rendering it difficult for the bird to rise at all off a level surface, and almost impossible to do so in a hurry. They ordinarily lay their eggs, each female bird 2 or 3 in number, in rude nests on ledges of rock covered with herbage; but Dampier states that, in the isle of Aves, they build nests in trees, though they have been always observed in other places to nest on the ground, which is a circumstance very unusual in birds, since, above all other particulars, they are invariable in their manner of nidification.

BOODROOM, BOUDROOM, BAUDRUN, or BODEUM (probably the ancient *Halicarnassus*), a seaport town of Asia Minor, on the N. shore of the gulf of Oos; pop. about 11,000, consisting chiefly of Greeks and Turks. It has a small but

good harbor, frequented by Turkish cruisers, and its inhabitants are partially engaged in building ships of war. The streets are narrow and dirty; the houses, of stone, generally have gardens attached. A castle built by the knights of Rhodes, a governor's residence, and some mosques, are among the principal edifices. There is also a ruined amphitheatre, and other remains of antiquity.

BOOK, by the law of England, is "construed to mean and include every volume, part or division of a volume, pamphlet, sheet of letter-press, sheet of music, map, chart, or plan separately published;" a definition sustained by etymology, but more comprehensive than the ordinary acceptation, which includes, primarily, only a printed literary composition, but permits a secondary application, as in case of books of account, to a bound volume of blank printing or writing material. The word is derived, not from the form, but from the material, *boe* being the Saxon equivalent of *liber*, the inner rind of a tree, which was once employed for writing upon. It has, however, received an application anterior to its own origin, and is used with reference to written tablets of stone and metal which preceded the introduction of more flexible material. In its widest sense, it dates from the most remote antiquity. The ten commandments were written on slabs of stone; the Babylonians and Egyptians traced inscriptions on bricks and rocks; sheets of wood, ivory, and various metals, and, subsequently, a great variety of pliable substances, animal and vegetable, crude and prepared, have been used for the purpose. Among the Greeks and Romans, books of wood were common; part of one which had contained the laws of Solon was preserved at Athens until the 1st century. For the more important purposes, the laws and edicts, they also employed ivory, bronze, and other metals, and for the common needs of business, such as the recording of contracts and the making of wills, for the courtesies of social life, the letters of love or friendship, they had the *diptycha* and *tabulae*, or *pugillaria*, sheets covered with wax, to be written upon with a *stilus*, and protected from contact by a raised margin, or opposite projections in the centres. Two of these tablets, of the date of 169, were discovered, not many years since, in Transylvania, and one of the year 1801 is preserved in the Florentine museum. Many specimens of ancient books still exist, which prove, without historical evidence, how various are the materials which suffice for the wants of man in an unlettered age. The antiquary Montfaucon, in 1699, purchased at Rome a leaden book of 6 thin leaves about 4 inches long by 8 wide, with covers and hinges of the same metal. The volume contained Egyptian gnostic figures and other unintelligible writing. In the university of Göttingen is a Bible of palm leaves, containing 5,376 leaves, and other similar books are elsewhere preserved. Among the Calmuck Tartars was found a collection of books that were

long and narrow, the leaves very thick and made of bark covered with varnish, the ink being white on a black ground. M. Santander possessed a beautiful Hebrew Pentateuch, written on 87 skins of oriental leather, sewed together with threads or strips of the same material: it formed a roll of 118 French feet in length. The shape of wooden and metal books was square, but, when more convenient material, such as parchment and papyrus, was introduced, the cylindrical form was adopted. The sheets, fastened together at the edges, were attached to a *cylindrus* or staff, round which they were rolled; whence volume, from *volvo*, to roll. At each end of the *cylindrus* was the *umbilicus* or *cornus*, a boss by which it could be turned, and the volume was read by unrolling the scroll so as to expose successively its several sheets or *paginae*. The title was written generally in red, on fine vellum, and pasted on the outside, which was dyed with *cedrus* or saffron. Much labor and expense was often involved in the ornamentation of books, and pleasant conceits were sometimes conveyed by their color. The practice of perfuming the pages to which Martial alludes,

When the page of cedar smells,
And with royal purple swells,

was not abandoned until within a quite recent period. Lord Treasurer Burleigh, instructing the vice-chancellor of Cambridge concerning the proper presentation of some volumes to Elizabeth, cautions him to "regard that the book had no savor of spike, which commonly bookbinders did seek to add to make their books savor well." Scrolls were superseded by *codices*, or square books, the advantages of which are alluded to by Martial, in whose time they seem to have been getting into general use. Modifications in form accompanied the various changes made in material, until the shape and general proportions which now obtain were adopted, though important differences in bulk, arising as well from the condition of art as the fashion of the times, distinguish books made up till a not very remote period from those of the present day. The slow and laborious method of transcribing, which, until the invention of printing, was the only mode by which literary compositions could be multiplied, secured to the body a practical reverence in which the spirit it contained did not always participate. The value of books, depending not only upon beauty of chirography, accuracy of transcription, and elaborateness of ornamentation, but upon the favor in which particular authors happened to be held, seems to have gone to each extreme; instances of extraordinary cheapness standing side by side with others of almost incredible dearness. According to Boeckh, in Athens, "a small book for the purpose of recording a contract (*γραμματοδιον*), that is, a small, commonly wooden diptychon, consisting of 2 wax tablets, was estimated by Demosthenes at 2 *chalci* ($\frac{1}{4}$ of an obolus, less than 1 cent). Wooden tablets

(*scavides*), on which accounts were written, cost, Olymp. 93, 2 (B. C. 407), a drachma (about 18 cents) apiece. These must have been pretty large and well made. Two pieces of papyrus for copying an account cost, at the same time, 2 dr. 4 ob. (45.6 cts.). Paper appears from this to have been very dear, although written books were cheap; since the books of Anaxagoras, even when dear, were to be had for a drachma; or else the paper upon which public accounts were written was uncommonly good." It is also stated that Plato, who was not rich, bought three books of Philolaus the Pythagorean, for 10,000 denarii (about \$1,800), and it is further said that Aristotle paid three Attic talents (nearly \$3,000) for a few books which had belonged to the philosopher Speusippus. But these apparent contradictions may be easily reconciled by a consideration of the probable conditions that occasionally existed; the number of certain works reducing them to the value merely of the transcriber's labor, or less, when supply exceeded demand, while the rarity of others gave a practical monopoly to their possessors. The manufacture of books, which, under the early emperors, had been constantly increasing, diminished during the growing troubles of the state, and upon its fall was for a long time entirely extinguished; to revive again after many years, but under greatly altered circumstances. Leaving the *librarii* and *scribae*, whose labor was compulsory either from the necessities of power or want, we come, after a long interval, to the monk scribes, in whom the important conditions of skill, leisure, love, and patience were all fulfilled. Learning had become the exclusive privilege of a class, a privilege of which they were at once proud and jealous; and they surrounded the means of its acquisition with a pomp and circumstance that precluded familiarity with the multitude. In the earliest times books had received the adorning aid of ornamental art; but in the middle ages they reached the acme, if not of beauty and convenience, at least of cost. The favored works of the time, principally of the Christian writers, were laboriously transcribed by patient penmen, in *scriptoria* liberally maintained in the monasteries, and specially devoted to that purpose. In the process of preparation their books received the most careful attention in regard to accuracy, elegance, and solidity. In the monasteries, also, the work was completed; for the monks were not only transcribers, illuminators, and binders, but the same individual frequently combined the triple function in his own person. From the hands of the scribe, whose solemn adjuration at the conclusion of his task was evidence not only of his own care but of his desire that others should imitate his example, the book passed to the illuminator, whose gorgeous colors still delight the bibliophile, and from him to the binder, by whom its ponderous proportions were encased in massive covers of wood and leather, studded with knobs and bands, often of gold and silver, and closed with broad clasps, to unfasten which,

letting the covers swing open on their stout hinges, was a privilege to which not every one was permitted to aspire. For, as said Richard De Bury, "laymen, to whom it matters not whether they look at a book turned wrong side upward or spread before them in its natural order, are altogether unworthy of any communion with books." Precious metals and the less crude but equally costly productions of art contributed to swell their value, in respect of which they stood at times on an equality with houses and lands. When publicly exposed, they were frequently secured by chains; they were protected by special statutes; were subjects of grave negotiation; solemnly bequeathed by will, and lent only to the higher orders, who were compelled to deposit ample pledges for their return. Even so late as 1471 Louis XI. was compelled by the faculty of medicine at Paris to deposit a valuable security, and give a responsible endorser, in order to obtain the loan of the works of Rhasis, an Arabian physician. Among the illustrations of cost which the industry of bibliographers has collected, we find that St. Jerome, to procure the works of Origen, impoverished his estate; that King Alfred, for one book, gave eight hides of land; that the countess of Anjou paid for a copy of the homilies of Bishop Huiman, beside other articles of barter, 200 sheep. Stowe says that, in 1274, a Bible finely written sold for 50 marks, about £34, at a time when wheat was 3s. 4d. a quarter, and labor 1d. a day; in 1400 a copy of Jean De Mehun's "Romance of the Rose" was publicly sold at Paris for 40 crowns, more than \$150 (a copy of the same work in MS. was sold at auction in London, 1857, for £42, and another at Paris, 1858, for $\frac{1}{2}$ of that sum). But, according to a document in the monastery of St. Stephen, at Caen, the works of Peter Lombard were bought, in 1431, for 7 francs. It is thus difficult to ascertain the prices of books as determined by the value of material and labor at remote periods; for the peculiar instances which have been placed on record are more likely to refer to exceptional and accidental conditions than to the ordinary and usual rates affixed by the understood laws of trade.—Printing, which, like many other inventions, owed, if not its discovery, at least its application, to the more sordid inclinations, and was not originally intended to effect any considerable results, except in the fortunes of a few individuals, made no immediate or violent innovation upon the then existing order of things. Types were made to imitate the slower process of writing, and the general appearance of MS. volumes was carefully imitated, so that for some time books still continued inaccessible to, even had they been coveted by, the people. But the desire was surely, though almost imperceptibly, growing; the gradually widening demand keeping pace with and encouraging the development of mechanic skill. Copies were multiplied with increasing rapidity and diminishing cost, and their sale becoming larger, while it reduced the proportionate expense, enlarged the aggregate

profits of the maker. Nevertheless, as we have observed, they were long beyond the common reach. Their early history discloses how much importance was conferred by their possession, and what solicitude was awakened for their care. We may yet trace in the solemn injunction which was then often written on the fly leaf, "Cursed be he who shall steal, or tear out the leaves, or in any way injure this book," the more familiar school-boy couplet of the present day, "Steal not this book, my honest friend," &c. If the progress of improvement has somewhat lessened reverence, it has been only upon better acquaintance, and fulfils the adage. Paper was made thinner and stronger, types smaller and clearer, and the pompous folios and quartos gave way, reluctantly indeed, to octavos and duodecimos, while the art of book manufacture has constantly tended to that lowest limit of expense and smallest magnitude of bulk, comporting with comfort and convenience, as well as a proper regard for the beautiful, which, if not yet attained, is, nevertheless, the object still pursued. The manufacture of a book now demands the assistance of various branches of mechanical skill. Beside the paper-maker, the type-founder, and the printer, to whom it gives a large proportion of employment, it engages, exclusively, the bookbinder. Its material form has, till the present era of cheap publications, always borne a commercial value extravagantly disproportionate to its matter, or that which alone constitutes its real worth, and, were argument required, a statement of these proportions would sufficiently demonstrate the reasonableness of a great reduction from former prices of books intended for public sale. In the ordinary class of books sold in the United States, in a permanent form, of the four principal interests represented, the most important, intrinsically, has the least commercial value. Every purchaser of a book, as a rule, pays more to the paper maker, the printer, and the binder, respectively, than to the author; and, although peculiar circumstances may compensate him, the reader has no redress. He is obliged to pay the several principal manufacturers more than he is required to pay the real maker; and so far as he is concerned, it is obvious that the privilege of determining for himself the extent of material expense, is not only desirable for his own sake, but also favorable to the reputation, if not to the gain of the writer.

BOOKBINDING is that art by which the material parts of a book are connected for convenience in use and protection from injury. It involves, in addition to skill in securing the sheets, no little knowledge of decorative art, for from its commencement it has gone beyond the mere necessities of utility, often to heights of notable extravagance. In respect of expense the limits have never been defined, ostentation of display having at times superseded the binder proper by the goldsmith and lapidary. The art was probably first exercised in fastening together sheets of wood or metal,

which were secured at the back by means of hinges; afterward, when more pliable substances were substituted, the sheets were sewed together at the edges and fixed at one end to a scroll round which they were rolled. For the invention of a glue to attach the edges, Phalarius, it is said, had a statue erected in his honor. The bookbinder then, as now, prepared the volume after the sheets had been impressed with their characters. He made the staff, affixed the bosses, the bands, and the title, and embellished the outside as his own or his customer's taste might suggest. Upon the introduction of the square-shaped book, up to and beyond the invention of printing, greater opportunities of ornamentation were obtained and employed. Jewels and precious metals, the finest stuffs, and the most gorgeous colors, united to give a material value, frequently without any elegance of design or chasteness of taste. Skelton's description, though purely fanciful, will convey an idea of what was in his time acceptable as the perfection of book decoration:

With that of the boke losende were the clasps:
The margent was illumynid all with golden railles
And byss, enpicturid with greesepoles and waspils,
With butterflys and freambe peocke tayls,
Enflorid with flowris and almyne saynys;
Enuyld picturis well towchid and quikly;
It wolde haue made a man hole that had be ryght sekely,
To beholde how it was garnyschyd and bounde,
Encouerde ouer with golde of tiseen fyne;
The clasps and bullyons were worth a thousande pounde;
With balaisies and charbuncles the borders did shyne;
With *aurum muscum* every other lyne
Was wrytin.

A much better taste distinguishes the book-binding of later years, more attention being paid to harmony and appropriateness than formerly, and gaudy adornments almost entirely discarded. The present tendency of the art is toward neatness in general effect, and, where ornament is at all conspicuous, to emblematic truth. The introduction of cloth binding has had the effect of combining considerable durability with economy, and a large proportion of books now made are bound in that style. Leather, morocco, velvet, occasionally ivory and mother-of-pearl, and sometimes highly polished wood, are used for the more expensive bindings, while with books intended for presentation, much latitude is allowed in respect of extrinsic adornments. At the crystal palace exhibition held in New York, 1853, the first premium for bookbinding was awarded to Wm. Matthews, for a copy of Owen Jones's "Alhambra," the bookbinder's work on which was estimated to be worth \$600. The material and decoration of the binding were solely such as properly belongs to the art, including no jewels or precious metals, and its value consisted almost entirely in the manual labor consumed in its production. As another, but opposite instance, may be mentioned a Bible bound for a gentleman of New York a few years since, in solid gold, at an expense of about \$400.—There are 2 kinds of binding, a description of which will suffice to give a general idea of the mechanical processes through

which a book goes after leaving the printer, before it is completed for sale. The first is cloth binding, the cheapest, and that in which machinery is most employed; the other is known by many particular names, such as calf, half-calf, morocco, &c., all involving the same general principles, the work on which is principally performed by hand. In the United States, machinery is employed to a far greater extent in binderies than in other countries, and its published results would cause surprise, if they did not excite doubt. In a bindery of New York, one book of nearly 200 pages, which has an enormous circulation, is bound at the rate of 8,000 per day, with facilities for binding at least 10 per minute, and that without interfering with the ordinary operations of a large establishment. Taking the volume in which this article appears as an example, we shall first describe the manner in which it is bound in cloth. Books derive a technical name descriptive of size from the leaves into which each printed sheet is folded, such as folio, quarto, octavo, duodecimo, &c. At the foot of the first page of each sheet is a number or letter, called the signature, by which the order is designated. This volume is called a royal 8vo, being printed on paper a size larger than the ordinary 8vo, and is printed on nearly 50 sheets, each containing 8 leaves or 16 pages. These sheets go to the binder in quires, and are first taken to the sheet room, where the work of folding, gathering, collating, and sewing is done by females. The whole edition of each sheet is folded by one girl with astonishing rapidity and accuracy. The most expert will fold about 400 an hour, but the average is perhaps $\frac{1}{2}$ less. A folding machine has been lately invented which is expected, with the aid of 2 girls, to do the work of 15. It has, however, not yet been generally introduced. After having been folded, the sheets are laid in piles, according to the order of the signatures, on the gathering table, from which they are taken one by one by the gatherer with the right hand, and then placed in the left, until a whole set is collected. This process, as well as that of folding, is performed with wonderful quickness, the gathering of 25,000 sheets per day being not unusual for an active girl. After this the sheets are knocked up evenly and pressed in a smashing machine, by which the delay of the screw or hydraulic press formerly employed is avoided. The book is now examined by the collator, who looks at each signature to insure that the volume is complete, each sheet being in its proper order without duplicates or deficiencies. Being found perfect, the book goes to the sawing machine, preparatory to sewing. Several volumes are taken together, and in an instant 5 revolving saws make as many cuts in the backs, of a size sufficient to admit the bands of twine to which the sheets are sewed. The sewer has a wooden frame, which consists of a table with 2 upright screws supporting a horizontal and adjustable rod, to which 3 strong bands fastened on the table are attached, at

distances corresponding to the 8 inner saw-marks. She then places the first sheet against the bands and passes her needle from the first cut or kettle stitch to the inside of the sheet, then out and in at every band, embracing each with the thread until the bottom is reached, then sews the next sheet in the same manner but in an opposite direction, and so on alternating until the last. End papers are now pasted on the book, which then leaves the sheet room, where about 1,000 are so prepared per day. In the forwarding room, which it enters next, its further progress is effected mainly by the aid of machinery. It is first prepared for the cutting machine, and, after its fore-edge has been cut, is glued and rounded by the workman, then returns to be cut on the ends, after which a piece of muslin is pasted over the back, nearly as long as the book, but extending about an inch over its sides to give strength to the joints. A backing machine then spreads the back and forms a groove for the boards; 2 paper linings are now glued to the back, and the book is ready for its cover, which has in the mean time been prepared in another department. The case is simply and expeditiously made, and is composed of millboards cut a little larger than the side of the book, strips of paper the exact length and width of the back, and the cloth cut sufficiently large to turn over all. The cloth is glued and one board placed upon it, then the paper at a short distance to allow for the joint, then the other board, after which the corners of the cloth are cut, the edges turned over, and it is rubbed smoothly down. When dry, it is given to the stamper, who letters it in gold* and embosses the sides. The letters are engraved on a metal stamp, and the impression is made in an embossing press heated by steam. Gold leaf is laid on the cover, and the heated stamp causes it to adhere where desired, the unused gold being afterward wiped off with a rubber. Then the book is pasted on the sides, placed in the cover and pressed till dry. This completes the process of case binding, which is distinguished more particularly from extra binding in having the book forwarded separate from its cover; and it may be useful to learn that some bookbinders pursue the same plan with morocco as with cloth, producing inferior work, not readily detected by the purchaser until after the volume has been some time in use.—Morocco or other extra binding will now be described. Though folded and gathered the same as the cloth copy, greater care is taken in pressing, and it is sewed in a different manner. The back is not sawed, but the bands, to the number of 5 in this volume, have their positions indicated by pencil marks. Instead of passing the needle out at the upper and in at the lower side, merely drawing them to the book, it is passed out at the lower and in at the upper, completely encircling the band, and forming a flexible hinge for the sheet. This is called flexible or raised band sewing, and constitutes

one of the distinguishing features of strong binding, being not only important but indispensable. The forwarder now receives the volume, pastes on and breaks up the end papers, glues the back, and when dry rounds it; after which the backing boards are placed on the sides a short distance from the back, and it is then screwed up in the laying press, and the back hammered very carefully, so as to spread the sheets on each side of the backing boards, at the same time not wrinkling the inside. By this process grooves are formed for the millboards, which, being cut of the desired size, are placed on the sides, and the book is subjected to a powerful pressure, during which the refuse glue is soaked off with pasta, the back is rubbed smooth and left to harden. It is now in shape, but with all the leaves uncut. No new machine has yet been made to supersede the old press and plough for cutting a book "in boards." The millboards are put close in the joints and even with the head of the book, the front board placed as much below the head as may be desired; the book is fixed tightly in the press, the head of the front board being on a level with it, and the head is cut; the same operation being repeated for the foot or tail, the boards being left larger than the book in order to overlay and protect the edges. The fore-edge is formed differently. A cord is wound tightly round the volume parallel with and close to the back, which is then beaten flat, the fore-edge cut straight, and, upon the release of the book from the cord by which it is bound, the back resumes its round, and the fore-edge becomes grooved. The edges are now gilded, for which purpose, the books being pressed, they are scraped smooth, and covered with a preparation of red chalk, as a groundwork for the size, a mixture of the white of egg and water, in the proportion of 1 egg to about $\frac{1}{4}$ pint of water. The gold is laid on the size, allowed to dry, and then burnished with an agate or bloodstone. Before being covered, headbands of silk are fixed to each end of the back projecting a little beyond the sheets, making the back the same length as the boards. The boards are bevelled at the edges, by means of a machine which grinds them with emery dust. The cover, pared thin, is now pasted on and drawn tightly over, but is afterward taken off for convenience in turning in the edges. The back, which has no lining, is well pasted, the cover drawn on again, the bands well nipped up, and great care is taken to make the leather adhere firmly to the back, and to set the boards closely and well forward in the joints. A book thus sewed and covered possesses the primary essentials of strong binding. The ornamenting or finishing is much a matter of taste within certain limits. The process by which decorative impressions are made on the outside of a book is called tooling, and usually blind tooling when plain. A beautiful effect is produced on morocco by the latter, making those glossy black indentations which so tastefully contrast with

the rich color of the leather. For this purpose the tools or stamps are heated and applied repeatedly to the morocco, which has been made thoroughly wet. End papers being neatly pasted to the boards, the book is finished. The foregoing will serve to point out the several processes through which the sheets pass before the book is completed, as well as to exhibit the distinguishing characteristics of the 2 principal styles of binding. The hollow or spring back, which is in much favor, and adapted in a superior degree to books in calf, is yet subject to rupture, and demands the binder's best attention. By securing the back always with muslin instead of paper, its strength will be greatly increased. India rubber binding, by which the leaves are fastened together with a cement of caoutchouc, is admirably adapted for certain purposes, particularly for music-books, engravings, atlases, and ledgers, as it admits of the book being opened to its full extent without the risk of dislocation.—The following books on bookbinding may be consulted with advantage: Peignot's *Essai historique et archéologique sur la reliure des livres* (Dijon, 1834); Greve's *Hand-und Lehrbuch der Buchbinderkunst* (2d ed., Berlin, 1832, 2 vols.); Arnett's *Bibliopectia*, and Reiffenberg's *De la reliure*, in his *Annuaire de la bibliothèque royale de la Belgique* (Brussels, 1850).

BOOKKEEPING, the method of exhibiting in a clear, concise, and intelligible manner, the primary, progressive, and present state of a man's pecuniary affairs. The system of bookkeeping in general use among merchants and men of business, called the "Italian method," from the country of its invention, and "double-entry," from the construction of its ledger, is of great antiquity. The celebrated Fuggers, whose commercial transactions extended all over Europe, kept their books and accounts by this method, and there is, in a private library at Augsburg, a ledger of Anton Fugger, bearing date 1492, which does not differ in principle from those now in use. The first treatise on the subject was written by Luca Pacciolo, better known by his local name, Luca de Burgo, and published at Venice, in 1495. The first German treatise on bookkeeping was written by Johann Gottlieb, and published at Nuremberg, in 1531. In 1548, Hugh Oldcastle produced, at London, "A profitable Treatise to learn to knowe the good order of the keyping of the famous recoyngne, called in Latin, *Dare et habere*, and in Englyshe, Debitour and Creditour." In 1602, a work in French, on double entry, appeared at Leyden, followed in 1652 by Collins's "An introduction to Merchants' accounts," Mair's "Bookkeeping modernized" the most elaborate exposition of the old Italian school published, appeared the following century, and passed through many editions. In 1789, Benjamin Booth modified the system, introduced many valuable improvements, and gave to the world the first and best work extant on the modern practice of monthly journalizing, under the title

of "A complete system of Bookkeeping;" an improved mode of doubly entry, comprising a regular series of transactions, as they have occurred in actual business; Degrange's *La tenue des livres en parties doubles*, published in Paris; and in Germany, Schiebe's *Die Lehre von der Buchhaltung* (3d ed., Grimma, 1847); and Langhenio's *Die doppelte kaufmännische Buchführung* (2d ed., Hamburg, 1847). The following are the fundamental principles upon which the science of double entry is based: The object of bookkeeping is everywhere the same; and, although the plans adopted may vary in number and form, the essentials of this art consist in the classification and arrangement of data in a book called the ledger. Each collection of data is called an account. An account, whether of persons or things, in the bookkeeping sense of the term, is a statement of all the transactions whereby the property of the concern has been affected by the person or thing in question. The accounts are designated by distinct and appropriate titles, and articles of opposite kinds are placed in opposite columns. No result could be satisfactory if data of a similar character were collected under different heads, or data of a dissimilar character under the same head; in the one case there would be confusion, in the other diffuseness, and in both a liability to error. Hence receipts should not be blended with payments; purchases with sales; gains with losses, and the like: they are distinct facts, and must occupy distinct positions. The space which an account occupies in the ledger being vertically divided, the left hand side is denominated debtor and the right hand side creditor. These terms, when applied to the personal accounts, are used in their ordinary sense; but when applied to an impersonal account, they have a more extended signification. All debit items are not sums owing to the concern, nor are all credit items sums owing by the concern; in short, the terms Dr. and Cr. serve merely to distinguish the left from the right hand side of an account, and the arithmetical signs *plus* and *minus* would equally answer this purpose. The nature and object of the principal accounts in a merchant's ledger are briefly as follows: 1. The receipts and payments of money are recorded under the title of cash. All receipts are entered in the left or debtor money column, and all payments in the right hand or creditor money column. The difference between the 2 sides, technically called the balance, represents the cash in hand. 2. Written securities, such as drafts, notes, or acceptances, received by the merchant, and for the payment of which other parties are responsible, are recorded under the title of bills receivable, and those issued or accepted by the merchant, for the payment of which he is responsible, are recorded under the title of bills payable; the former account invariably represents assets, and the latter liabilities, in the shape of bills. 3. An account must be opened for each person or firm with whom the merchant has dealings on trust

under their respective names, or the name of the firm with which they are connected. The design of a personal account is to show what is owing to or by the person in question. The terms debtor and creditor are here used in their ordinary sense; since each person is made debtor for what he owes, and creditor for what is owing to him. 4. Purchases and sales are recorded under the name of the specific property bought or sold; the cost or outlay being entered on the debtor side, and the sales, or returns, as well as the value unsold, at the time the accounts are adjusted, on the credit side. The result is gain or loss as the case may be. 5. The capital invested in business, in the outset, is recorded under the title of stock, or capital stock, and the gains and losses under the double title of profit and loss. Commission, charges, interest, and the like, are merely subdivisions of the profit and loss, and the latter is simply a branch of the stock account. It is a primary axiom of science that "the whole is equal to the sum of its parts," and bookkeeping is based upon this foundation. It considers property as a whole composed of various parts: the stock account exhibits the capital collectively, that is, in one mass; the other accounts exhibit its component parts. The component parts of property are in a state of continual change, but whatever variations they undergo, and whether the capital increase, diminish, or remain stationary, it must be constantly equal to the sum of its parts; gains increase, while losses decrease the capital; they also increase or decrease the assets, of which the capital is composed, in the same ratio; hence the whole and the parts mutually check and verify each other, and an equilibrium is maintained under every variation that can occur. But without deducing it from the connection of the accounts, this equality is obvious from the very signification of the terms debtor and creditor. These terms being correlative, the one implies and involves the other, and cannot exist without it. If, therefore, for every debtor there must be a corresponding creditor, and for every creditor a corresponding debtor, the respective sums of these equalities must also be equal. In short, the fundamental and immutable law of double entry is this: every transaction which affects or modifies the capital, or its component parts, must be twice entered; that is, to the debit of one or more accounts, and *vice versa*. The whole scheme of bookkeeping is but the means of collecting and classifying business transactions in the ledger. The ledger represents concentrated and not diffuse accounts; it is, in fact, a tabular centralization of the subordinate books, and the final instrument of the balance-sheet. When the accounts are completed, there remains the last process, which consists in balancing the books; that is, in closing and equilibrating the several accounts, and in collecting the results, so as to exhibit, in a concise form, the gains and losses, the assets and debts, and the present capital. The

increase or decrease of the capital must obviously keep pace with the gain or loss resulting from the business, and the original capital, increased by the gain or decreased by the losses, must, in all cases, equal the difference between the assets and debts. Every transaction in business being virtually a transfer between 2 accounts, it must be entered to the debit of the one, and to the credit of the other; these 2 balancing entries are made in the ledger, and comprise all that is scientific in the system of double entry. The entries in the primary books are merely preparatory arrangements, totally unconnected with the principle and proof of accounts. The most indispensable preliminary in the process of book-keeping is the registration of all the data of which the accounts are composed in chronological order, and in language as clear and concise as possible. In the infancy of commerce, all the transactions were recorded in one book, called the waste book; but as mercantile affairs took a wider range, this practice was found to be impracticable, and separate books were required for each department of business. The subsidiary books in general use are: The cash-book, which contains a daily record of the receipts and payments of money. The bill-book, which contains a daily record of the bills, notes, or acceptances received and issued. The invoice-book, which contains the particulars of goods purchased, and is simply a transcript of the invoices or bills of parcels. The sales-book, which contains the particulars of goods sold on credit, or shipped abroad on consignment. The day-book, which is used to record such transactions as do not properly belong to either of the other subsidiary books. The journal is a record of the transactions compiled from the subsidiary books, daily, weekly, or monthly, as may be expedient. The rules for distinguishing the accounts which are to be debited and credited, are inferred from the arrangement of the ledger. The following embraces all that can be said upon the subject, viz.: The thing received, or the person accountable to you, is debtor; the thing delivered, or the person to whom you are accountable, is creditor, thus: 1. The person to whom any thing is delivered is debtor to the thing delivered when nothing is received in return. Therefore, when money is paid, the receiver is debtor to cash; when goods are sold upon credit, the purchaser is debtor to goods. 2. The thing received is debtor to the person from whom it is received when nothing is delivered in return. Therefore, when money is received, cash is debtor to the payer; when goods are bought on credit, goods are debtor to the seller. 3. The thing received is debtor to the thing given for it. Therefore, goods bought for ready money are debtor to cash; when goods are sold for ready money, cash is debtor to goods. 4. When one person delivers any thing to another on your account, the person who receives the value is debtor, and the person who gives it creditor. Therefore,

if A pays B \$100 on your account, the journal entry is B debtor to A; the meaning of which is not that B owes A; but that B is indebted to you, and you are indebted to A.

BOOKS, CATALOGUES OF. See CATALOGUES.

BOOKS, CENSORSHIP OF. See CENSORSHIP.

BOOKSELLING is distinguished from most other commercial pursuits by the adventitious interest it has derived from association. Its history is closely and to some extent inseparably connected with the history of literature, for, though the bookseller cannot claim, what Dr. Johnson conceded, to be the patron, he is nevertheless the paymaster, of authors, and up to the still recent period of journalism and the periodical press, he was almost the sole medium between them and the public. Such reflected interest entails a due proportion of odium, and the trade has been, and still is, held accountable for the moral rectitude, independent of the legal and commercial propriety, of its transactions with writers. That desire which seeks to disclose the secrets of the publisher's ledger, is prompted by higher motives than mere curiosity. Did the *Sosii* pay, and liberally, for a satire of Horace? and how much got Martial for an epigram, and Quintilian for his "Institutes" from Trypho? are questions which may well be asked, though not to be answered. There is perhaps no other calling which can show so many generous relinquishments in behalf of those from a contract with whom they have gained unexpected profit. The £5 which Simons gave for "Paradise Lost," secured, as well as a good bargain, no little obloquy; yet it may be doubted whether, on a full exhibition of all the facts, it would not be seen that the price was quite as liberal as the £4,275 which Byron received for "Childe Harold." The shrewdest members of the trade have all along sought to relieve their business from its too speculative character; they have striven to bring it within the operation of the ordinary laws of trade as far as it is possible, and we find an almost universal custom obtaining among publishers of paying authors a certain fixed percentage instead of buying their works outright. Whether the ancient writers received any remuneration from publishers is not clear. The first correspondence between men of letters and the public was oral; all the great literary productions of the earliest historic period, being prepared for other purposes than those of publication, fulfilled their immediate object in the forum, the academy, and the theatre. That written works had a value beyond the material part was indeed sufficiently recognized, but it is by no means settled that such special value had, until our own era, any practical acknowledgment. The younger Pliny, writing of his uncle, says that he himself "used to relate that when he was procurator in Spain, he might have parted with his commonplace book (*Electorum Commentarii*) to Largius Licinius for 400,000 sesterces" (about \$16,000); but as Licinius was not a bookseller, this instance is of

little force. Martial says the "Hospitalians" could be bought for 4 sesterces, but he clearly recognized the greater value his books really possessed, as one of his epigrams proves:

Give thee my books, indeed? thou greedy sop!
I have them not; thou'lt find them in the shop;

and Horace alludes to the likelihood of one work making a fortune for the bookseller. It is argued from such premises as these that authors, and especially the needy, as Martial was, would not have neglected to detect and avail themselves of such an obvious source of income. It has been determined that the purchase of copyrights originated with the Roman *bibliopola*, but we have very little knowledge of the exact pecuniary relations between booksellers and authors previous to the last few hundred years, since which time the public began to supersede the patron. The writer of an acceptable ode to Augustus or Mæcenas might well afford to despise the "sweaty hands of the vulgar" who frequented the bookstalls, and to refuse a participation of profits with the *librarii*. The same holds good till almost within the memory of the living; Mæcenas, with Virgil, Horace, and Propertius, had in England, not a hundred years since, most faithful though humble imitators. The literature of dedications is identified with the days of patrons and subscribers, classes which, happily for letters, are now extinct. In course of time the bookseller began to find a market among the masses; he learned some of the marvellous effects of numbers, found how easily shillings became pounds, and pence shillings; and when the results became known, when a publisher like Lintot could afford to pay a poet like Pope more than £4,000, the old feeling which disdained the pecuniary rewards of literature was in course of modification. For labor in any practical direction had always been considered slightly offensive to a certain pride, and payment for authorship was too direct an acknowledgment of work and its value to be for a moment tolerated; at least, when that payment was inconsiderable. Ulterior objects and indirect rewards might, indeed, be hoped for; but as the Roman advocates had a moral fiction which denied fees though it permitted gratuities, so literary men, from the earliest times until a period not very far removed, disdained, or affected to disdain, the gold of the bookseller. As a distinct pursuit, the selling of books must have shortly followed upon the demand for them. Transcribing is an art acquired only after long study, and when scribes began to be employed, it is reasonable to suppose that their leisure time was engaged in preparing volumes for which they knew by experience there would be a sale. Thus, as scribes increased (and they were numerous in early times) books would, no doubt, accumulate, and differences in the workers' expertness creating corresponding differences in value, buyers would have opportunities for selection, which they would not be apt to overlook; thus stocks would of necessity be collected,

and the book shop instituted. From a passage in Xenophon it is inferred that books were articles of traffic in his time (about 400 B. C.). According to the best rendering, it is stated in the "Anabasis" that at Salmydessus, on the Euxine, they found "couches, written books, and many other things such as seamen carry in their wooden chests;" and in the "Memorabilia," mention is made of one Euthydemus who had collected many writings of the most celebrated poets and sophists. Dion was urged by Plato to purchase the books of Pythagoras, and Hermodorus, a disciple of Plato, is stated to have copied his master's works and taken them to Sicily for sale. Lycon, the philosopher, says Diogenes Laërtius, bequeathed to a relative, Lycon also by name, all his books that were published; but those which were not published to Callinus, that he might publish them with due care. From these incidental allusions it may be reasonably concluded that books were common articles of sale as early as the days of Socrates, though by some commentators the evidence is not considered sufficient. Diogenes Laërtius, in his life of Zeno, establishes the existence of booksellers' shops or stalls about 250 B. C. "When he (Zeno) had made his way from the coast as far as Athens, he sat down by a bookseller's stall, being now about thirty years of age. And as he took up the second book of Xenophon's 'Memorabilia' and began to read it, he was delighted with it, and asked where such men as were described in that book lived; and as Orates happened very seasonably to pass at the moment, the bookseller pointed him out, and said, 'Follow that man.'" As we approach the Christian era there is abundance of testimony relative to the number of booksellers, their location, and customs. Catullus speaks of looking into all the bookshops, and Pollux says they were common in all the seaport towns. Martial makes frequent and familiar allusions to them; one passage gives a lively description. As rendered by Elphinstone, it runs:

You see a shop with titled poets,
And read what'er Parnassus boasts.
Thence summon me, nor ask the dweller;
Honest Atreus is the seller.
From out the first or second nest
He'll hand me, ras'd, in purple vest,
Five humble tenpences the price:
A bard so noted and so nice.

And Horace, before Martial, apostrophizing his book, writes: "You seem, my book, to look wistfully at Janus and Vertumnus, to the end that you may be set out for sale, neatly polished by the pumice stone of the Sœii. You hate keys and seals, which are agreeable to a modest volume; you grieve that you are shown to but a few, and extol public places, though educated in another manner." Similar allusions are found in many other writers of that period, such as Pliny, Cicero, and Strabo, the latter of whom, complaining of the inaccuracy of books exposed for sale in Alexandria, proves how mere a matter of trade they had become. In Rome, at that time, booksellers were men of repute, many of

whose names have been transmitted to us. Several had obtained creditable distinction for accuracy and taste, and their relations with authors were of the most friendly and familiar character. "You have prevailed upon me," writes Quintilian to his publisher, Trypho, "by your daily importunity, to proceed at once to publish the books on the education of an orator;" and, after giving some cogent reasons for delay, proceeds, "yet if they are so much demanded, as you say, let us give our sails to the wind." The book business in Rome was divided among the *librarii* or *scribae*, who transcribed MSS., the *librarioli*, who illuminated the title-pages, margins, &c., the *bibliophagi*, answering to the modern binder, and the *bibliopola* or sellers, whose shops were called *libraria*. These stalls were principally in the streets near the Forum, the Palladium, the Sigillarii, the Argiletum, and the Via Sandalinaria. They were the daily resort of the men of letters, the wits, and the quidnuncs, who communicated the news of the day, discussed the merits of a satire of Horace or Martial's last epigram, argued upon points of philological intricacy, and tested each other's learning; as in the days of Shakespeare and Ben Jonson, the men of letters and leisure gathered at the Mermaid; or further on, in the time of Queen Anne, the wits resorted to Will's and White's, to cut up the last comedy of Congreve, or cross lances with Addison or Steele. "I and Julius Paulus, the poet," says the gossiping Aulus Gellius, "were sitting in a shop at the Sigillaria. Here lay for sale the 'Annals of Fabius,' books of good and undisputed antiquity, which the seller asserted were perfect;" and he proceeds to state how an acute grammarian detected a misspelled word. The same writer, at another time, speaks of a "foolish fellow boasting in a bookseller's shop."—After the fall of the Roman empire, and until the revival of learning, bookselling, as a trade, seems to have been entirely abandoned. The limited demand for books was mostly confined to the clergy, and included only religious works, which they themselves supplied. Booksellers were again called into being on the founding of the universities, and they became established at Paris, Bologna, Vienna, Palermo, Padua, Salamanca, and Oxford, supplying the students who flocked to those seats of learning from all parts of Europe. Sustained by the universities, they became subject to their control, and stringent regulations were enacted for the government of the trade. At Paris only a limited number was permitted, and they were prohibited from selling their volumes above a determined price, being also obliged to make a deduction in behalf of students. By the statutes of 1342, they were strictly enjoined to observe certain rules as to price, correctness, and mode of display. They were to keep on view lists of all books, with prices affixed, and were compelled by statute of 1323 to lend copies for the purpose of transcription, the hire of a Bible being 10 sous. These statutes of the Paris university were frequent and numerous; the first

bear the dates of 1259 and 1275, and in 1392 we learn that there were in Paris 24 professional copyists, 17 binders, and 8 booksellers. The latter were called *stationarii*, from the fact of their places being fixed. Most of the regulations enforced at Paris were, in 1384, adopted by the university of Vienna. The strict and despotic control exercised was amply compensated by privileges conferred. Remuneration was assured by the limited number of vendors, and the profession was dignified by a participation in the honors and immunities which attached to masters and students of the university. Indeed, no little learning and critical acumen were required to constitute a competent bookseller. It was necessary to be familiar with the works transcribed, to know the comparative integrity and value of various MSS.; to have scholastic erudition sufficient for the intelligent revision of books, and taste to direct their embellishment. To obtain a license, he was obliged to demonstrate his capacity, moral and mental, and to retain it he had to obey the laws enacted for his government. These conditions promoted the prosperity of the calling; its members acquired distinction, and accumulated wealth, and, until long after the invention of printing, their ranks were recruited by men eminent for talent and learning. The early printers were booksellers as well, nor did the 2 professions separate until it became advisable from considerations of commercial convenience and economy. John Faust disposed of the first edition of the printed Bible among the various universities, carefully preserving his secret until compelled to disclose it. He sold a considerable number in Paris at the current rates, but, finding it difficult to procure purchasers for all he had, reduced the price from 60 to, at the last, 20 crowns. This exciting surprise, led to investigation, and it was discovered that all his books were exact copies of one another, a marvel at once explained on the supernatural hypothesis. Faust preferred to resolve the mystery rather than submit to the usual process of exorcism. Before the close of the century the trade had greatly expanded. Anthony Kober, of Nuremberg, printer and bookseller (1473–1518) had 24 presses and about 100 workmen in his employ, and kept shops at Leipsic, Frankfurt, Amsterdam, and Venice. John Otto, also of Nuremberg, born 1510, is the first on record who, since the invention of printing, not being a printer, bought copyrights. In Germany the trade first became established and methodized in the manner which still obtains, and we shall further treat the subject under its national divisions. Sellers of books, as the sellers of other wares, found in those times their best opportunities at the periodical fairs. The first regular congregation of booksellers assembled at the Frankfort fairs, and that city for some time was the chief resort of the book trade. In 1473 Kober of Nuremberg, Plantin of Antwerp, and Etienne of Paris, noted printers, were in attendance. In 1526 Christopher Froschauer writes

to Ulrich Zwingli, of Basel, concerning the excellent sale of his books, and in 1549 Operin of Basel visited the fair with much profit. Owing to peculiar causes, Leipsic grew into favor with the booksellers, and finally became the centre of the trade throughout Germany. Steiger and Boskopf, of Nuremberg, attended the fair in 1545; in 1556 Clement, of Paris, and in 1560 Valgrisi, of Venice, visited it with their publications. The number of new works brought to Leipsic in 1589 was 862, of which 246 were in Latin, 200 were on theological subjects, 48 on law and jurisprudence, and 45 on philology and philosophy. In 1616, 14 booksellers had established themselves in that city, and contributed to the fair the same year 153 new works. From the commencement of the present century book-selling and publishing have been carried on separately in Germany, and within that time the business has been much modified. Formerly booksellers were accustomed to meet at Leipsic twice a year, at Easter and Michaelmas, for the purpose of exchanging their respective publications, and balances were generally carried over till the next meeting. Afterward, differences were settled in cash, and it was customary to sell new books with the privilege of returning unsold copies. At present business is done at Leipsic through a system of agencies, by "commissioners" there established, who act on behalf of the principal booksellers throughout Germany and Europe as well. These commissioners buy and sell on behalf of their principals, to whom accounts are remitted for final settlement. By such an arrangement buyers and sellers are brought into one common focus, and the system is in much favor. At Leipsic there are 82 commissioners, representing 2,275 firms, including dealers in books, music, maps, and charts, of whom 1,326 are retail booksellers, located at 538 different places. At this great centre of trade there are represented, of booksellers in Switzerland, 87; Russia, 72; America, 22; Netherlands, 25; France, 21; Denmark, 24; Great Britain, 16; Sweden and Norway, 21; Belgium, 15; Spain, 2; Turkey, 8; and in Rome, Naples, Sardinia, and Australia, 1 each. Beside Leipsic, there are other centres of the book trade in which the same system is pursued. The following are the most important, and the numbers appended to each signify respectively the commissioners at each place and the different houses they represent: Berlin, 28—185; Frankfort, 15—239; Vienna, 26—245; Stuttgart, 15—500; Augsburg, 10—135; Nuremberg, 7—165; and Zürich, 5—50. Publishing in Germany compares very favorably with that of any other country. Of all works, including pamphlets, and ephemeral issues, there are about 10,000 annually, but the average number of copies is small, the usual edition of ordinary works of fiction being from 800 to 1,200, a large part of which is taken by circulating libraries. The rule has exceptions, as an instance of which a late publication may be cited. In 1856 Justus Perthes of Gotha paid for

the copyright of Barth's "Travels in Africa," 5 vols. 8vo, 20,000 thalers (\$15,000). During the first half of the year 1855, 3,879 works appeared in Germany: in Leipsic 598, Berlin 571, Stuttgart 197, Hamburg 96, Munich 93; of the 3,879, 1,242 were published in Prussia, 724 in Saxony, 715 in Austria, 897 in Bavaria, 270 in Wurtemberg, and 109 in Hanover. During the same period 235 works in the German language were published in other European countries, viz.: Switzerland 155, Russia 81, Hungary 16, France 12, Belgium 10, Denmark 6, Holland 8, and in England 1. German publishers advertise little, are innocent of "sensation" books, and have no jobbing houses as with us.—From the time of Oaxton and Wynkyn de Worde publishing and bookselling in England went slowly, hand in hand, through a long and discouraging period. The unsettled state of government absorbed public attention to the exclusion of literature. Still, there is much interest in the history of the trade even then; its vitality was never extinguished; its progress, although impeded, was never stopped. Until 1600, up to which time there had been 350 printers, 10,000 different works are recorded, an average of 75 per annum. In the publication of certain volumes there was considerable activity, 326 editions of the Bible printed between 1526 and 1600 being still extant. Evelyn states that at the great fire in London, 1666, the booksellers lost as much as £300,000 in stock, but the statement is not much to be relied on. It took from 1623 to 1664 to sell 2 editions of Shakespeare. A catalogue of books published in England from 1666 to the end of Trinity term, 1680, gives the whole number at 3,550; of which 947 were divinity, 420 law, and 153 physic; 397 were school books, and 253 on subjects of geography and navigation, including maps. About half of these books were single sermons and tracts. Deducting the reprints, pamphlets, single sermons, and maps, Mr. Knight estimates the annual average of new books at 100. John Dunton, a bookseller of the time, who afterward visited America, says of his own undertaking: "Printing was now uppermost in my thoughts; and hackney authors began to ply me with specimens as earnestly, and with as much passion and concern, as the watermen do passengers with oars and sculls." Roger North describes the "demi-booksellers," who deal in the "fresh scum of the press," as those who "crack their brains to find out selling subjects, and keep hirelings in garrets, at hard meat, to write and correct by the great; and so puff up an octavo to a sufficient thickness, and there is six shillings current for an hour and a half's reading, and perhaps never to be read or looked upon after." At the beginning of the 18th century the price of a folio or quarto volume ranged from 10s. to 12s., an octavo from 5s. to 6s., and a duodecimo from 2s. 6d. to 3s. From 1700 to 1756 about 5,280 new works, exclusive of tracts and

pamphlets, were issued, or about 98 per annum; while from 1756 to 1808 the average was nearly doubled. The circulation of books up to the beginning of the 19th century was comparatively limited. Popular works were hawked about in the pack of the peddler, and sold along with tape and ribbons; and productions of more pretension were published only by the aid of patrons. From this thralldom the better class of literature was emancipated on the increase of the reading public. The establishment of journals and periodicals created, and to some extent directed, public demand; the custom of reviewing books, which was then introduced, elevated new publications into events, and booksellers, profiting by the opportunity of making money by the legitimate operation of bargain and sale, soon entered into the speculative purchase of MSS. The business, however, did not, for a long time, assume such proportions as now distinguish it. In the case of expensive works publishers were in the habit of associating to defray the cost of production. The plan of selling important works in parts, thereby dividing the payments into small instalments, was originated by Henry Fisher about 1800. This system was very successful, and has continued as a prosperous branch of bookselling until the present day. Many great works have been thus issued; among them Chambers's "Cyclopædia," Smollett's "History of England," and Scott's "Family Bible." The prudent and intelligent cottager might thus possess, without serious and sudden encroachment on his means, works which a few hundred years before a king would have envied. On the introduction of this system, which had cheapness for its leading object, we find that the ordinary traffic had enhanced prices instead of having reduced them. Books had risen greatly in cost, and averaged, the folio and quarto £1 1s., the octavo 10s., the 12mo 4s.; which were subsequently still further increased, until, within a few years past, cheapness has been discovered to be not incompatible with profit. According to the "London Catalogue," there were published between 1800 and 1837, 19,860 books, including reprints; for which deducting one-fifth, there would be an annual average of 588. From 1816 to 1851 there were published 45,072 books, giving an average of 1,252 for each year. In 1853 there were 2,580 books published, and since that time the average has, as far as may be ascertained without laborious calculation, steadily increased. In a consideration of the amount of capital invested in book manufacturing, and the extent of its operations with the public, a very important element is likely to be generally neglected. It was in evidence before the house of commons in 1851, that the sale of immoral and infidel publications amounted to 29,000,000 annually; more than the total issue of the society for the promotion of Christian knowledge, the religious tract society, the British and foreign Bible society, the Scottish Bible society, the Trinitarian

Bible society, and some 70 religious magazines, combined. There were sold, of the last dying speech of Good, 1,650,000; of Courvoisier, 1,666,000; of the Mannings, 2,000,000; of Rush, 2,700,000; and of Greenacre, 2,666,000. This revelation led to an attempt, under influential patronage, to bring within the means and reach of the humbler classes reading of a better character, and it has thus far been attended with gratifying success. The London "Times" remarks upon this subject: "It is interesting to see the nature of the books which are most popular. Bunyan's 'Pilgrim's Progress' and Bogatzky's 'Golden Treasury' always find a ready sale. Milton has many admirers, 'Johnson's Dictionary' more. Church services, well got up, are in great request among domestic servants. Cheap books on the war, published by Routledge, were eagerly purchased. Richmond's 'Annals of the Poor,' a history of the county, 'Robinson Crusoe,' and Paxton's 'Cottage Gardener's Calendar,' are all most popular. Pictures published by Herring, Baxter, and the society for the promotion of Christian knowledge, are gradually superseding the 'Epistle to Abgarus.' Half-penny and farthing books are sold by the gross." The trade in England may be conveniently divided into booksellers and publishers, both branches, as with us, being often combined. There are also jobbing houses, which supply retailers, and buy in considerable quantities from the publishers. There are also many societies which issue books in large numbers, and which possess extensive and active establishments. Retail bookselling in London possesses many features of interest, and is remarkable in respect of the nicety to which classification has been brought. In this storehouse of bibliographical treasures, the greatest in the world, every department of bookselling, ancient and modern, is represented. There are shops wherein are sold only those books relating to one particular department of science or art, and they embrace nearly every department; so also of religious sects; of books in different languages; shops where are sold only books on chess; others where they keep only those on astrology and occult sciences; others again that have only genealogy and heraldry, and, most curious of all, booksellers exclusively of odd volumes. The machinery employed for bringing books before the public is much the same as in the United States, demand being incited and stimulated through the press. The most peculiar custom is a species of trade sales, technically called "Albion" sales, from the place in which they are held. These sales are regularly got up only by 8 great publishers, the Longmans, Murray, and Bohn; others, either singly or associated, occasionally hold them. The booksellers of London and Westminster only are permitted to attend, and the meeting commences with the inevitable English preliminary of a dinner, after which the auctioneer presides. The numbers sold are often very large,

as, for example, 10,000 of Livingstone's "Travels in South Africa," and 80,000 of Brock's "Life of Gen. Havelock;" other works have great circulation. The serials of Dickens are estimated to have a sale of 85,000, and Macaulay's history as many as 40,000. By the census of 1851 there were in England and Wales 6,905 booksellers and publishers; in Scotland, 1,486; and, according to good authority, there were 168 in Ireland.—In France, bookselling centres in Paris, where there are about 400 bookstores. In the sale of books but little machinery is employed, neither trade sales nor fairs being held. The usages between publishers and authors are somewhat peculiar, for the more popular writers rarely dispose entirely of their copyrights either for a fixed sum or a percentage. They often sell the right to print a certain number in a certain style, which are to be sold at a price determined by themselves, and it not infrequently happens that 2 or more publishers will issue editions of the same work. The "Edinburgh Review" remarks upon a phase of French literature analogous to that which has been referred to in the account given of bookselling in England: "Few even among the best informed readers of the literature of the day will be prepared for the fact that, side by side with the known productions of the press of Paris, there has existed from time immemorial in France another, and, in its own sphere, hardly less influential literature, addressing a totally different public, enjoying a separate and peculiar circulation, and possessing an organization, both for production and distribution, almost entirely independent of the ordinary machinery of literary commerce. Still less will they be prepared to learn that the number of volumes thus annually put into circulation throughout the length and breadth of France amounts to nearly 10,000,000, at prices ranging from a franc down to a sou; or for the still more extraordinary fact, that among this enormous number, with the exception of a few of the modern novels, hardly a single volume—at least in the form in which it is circulated by the hawkers—is the production of any writer whose works have ever attracted the attention of our readers. So that we are led to the singular conclusion, that a substratum of publications of enormous extent supplies the demand and feeds the curiosity of the lower orders, utterly unconnected with the higher creations of French genius, coarser in form and in substance, and very slightly affected by the vicissitudes of taste and opinion." The *Journal de la Librairie* of Paris has prepared some statistics of the book trade in France, from which it appears that, from Nov. 1, 1811, to Dec. 31, 1855, or 44 years and 2 months, no less than 271,994 books have been published in France. This number includes books written in foreign languages, as well as Greek and Latin authors. The number of engravings, drawings, lithographs, maps, and plans, reaches 47,-

425, and to this number must be added 17,449 musical compositions—making altogether 336,868 publications. In the year 1855 alone, 8,235 literary works were published in France, with 1,105 musical compositions. The engravings, maps, lithographs, issued within the same period, amount to 2,857 issues—the total being 12,217. Of the 44 years included in the statistics of the *Journal de la Librairie*, it appears that 1855, with the exception of 1825, was the most productive. In 1825, the number of issues amounted to 8,265. The figures from 1851 to 1854 run thus: in 1851, 7,350; in 1852, 8,264; in 1853, 8,060; in 1854, 8,336. In 1854, 1855, and 1856, the value of books imported into France amounted to \$1,175,000, of books exported during the same time, \$7,900,000. With regard to the countries to which the exports of books were made, Belgium ranks by far the highest, and England next; then follow in order as named—Switzerland, Sardinia, United States, Germany and Spain (equal), Mexico, Portugal, Tuscany, the Two Sicilies, Turkey and Egypt, Russia, and the Papal States. For imports, Belgium still stands highest; then Germany, England, Spain, Sardinia, United States, Holland.—During the year 1854, 861 works in the Russian language, and 451 in foreign languages, were printed in Russia, beside 2,940 scientific and literary treatises in the different periodicals. The number of authors was 1,239, that of printing offices, for works in the Russian language, 85, of which 45 were in St. Petersburg, and 16 in Moscow. In the same year 886,425 volumes were imported. In 1855, 1,148 original works and 91 translations were published, and the imports were 1,191,745 volumes. In Poland, in 1855, 22,608 works were imported.—Some statistics upon publishing in Austria, prepared by Dr. Wurzbach, show that, for the year 1854, the total number of publications was 24,039—12,963 German, 6,186 Italian, 1,482 Hungarian, 815 Polish, 757 Cechic, 453 Slavic, 363 Croatian, 244 Russniak, 214 Servian, 171 Romanian. Vienna and Milan are the principal places of publication, after which comes Hungary. During this period 500 books have been issued in Hungary, the smallest number in the Cechic language. Trieste and its vicinity have published 291, the Tyrol 170, and Poland 169. In Croatia have been published 25, Carinthia 18, Dalmatia 15, Austrian Silesia 14, Banat 8, the Military Circle 4, Bukowina 2. In Bohemia there are 7,874 inhabitants for one publication, in Hungary 9,555, and in southern Austria 979. Of the 24,000 publications, 1,888 were theological, 812 sermons and morals, 1,806 educational, 3,579 on law, 5,647 on commerce, 792 natural science, 667 history, 223 geography, 155 poetry, 146 plays, 546 romances, beside journals.—In the 7 years from 1847 to 1854 the following numbers of books are stated to have appeared in Norway: in philology 87, metaphysics 23, pedagogical science 65, theology 18, law 63,

politics and national economy 46, medical science 26, natural philosophy 39, rural economy 48, technology 12, history 123, nautical and commercial science 38, military science 28, mathematics 28, belles-lettres 187, miscellaneous writings 6—a total, during the 7 years, of 1,027 volumes, or, on an average, 146 every year. Of these, 870 were original works, 139 translations, and the remaining 18 reprints of older books. More than two-thirds of the number, viz., 791 volumes, were printed at Christiania (the seat of the university), whereas only 100 appeared at Bergen (the principal commercial town), 27 at Drontheim, 26 at Stavanger, 19 at Skien, 11 at Christiansand, &c. In order to buy a copy of every book appearing in Norway, a sum of 90 to 100 species (\$100 to \$125) per annum would suffice. The whole literature of the country since 1814 may be purchased for a little more than 2,500 species.—In the 9 years from 1848 to 1856, 1,799 printed works, on an average, have appeared annually in Holland; a figure which, when compared with a population of only about 3,000,000, is by no means unimportant. Beside, it has been regularly increasing ever since 1851; in 1856 the sum total of new works amounted to 1,859. Of these, 849 were devoted to theology, 265 to philology and literary history, and 188 were school books. Political economy was represented by 138 works, history by 112, natural philosophy by 52, mathematics by 25, jurisprudence by 48, metaphysics by only 17. Belles-lettres mustered 142 works, of which 57 were novels. The number of publishers and booksellers amounts to 900, that of printers to 287, and that of paper factories to 184.—In Greece, the Ionian islands, and Turkey, there were 188 books published in 1851, and in 1852, 164: 120 in Greece; 29, Ionian Islands; 7, Turkey; 107, Athens; 8, Syra; 3, Patras; 1, Nauplia; 1, Tripolizza; 14, Corfu; 8, Cephalonia; 7, Zante; 2, Constantinople; 4, Smyrna; and 1, Bucharest.—During 6 months of 1856 it is stated that over 400 books were published in Piedmont, of which a large proportion were polemical essays; the number includes 12 volumes of poetry, 7 romances, 5 dramas, 30 histories, and 12 historical memoirs.—Bookselling in America presents no very notable historical incidents. The first of the profession mentioned by Thomas in his "History of Printing," is Hezekiah Usher, of Boston, known to have been in the business as early as 1652. His son, John Usher, succeeded him, and is thus spoken of by Dunton, who visited Boston in 1686: "This trader makes the best figure in Boston; he's very rich, adventures much to sea, but has got his estate by book-selling." Of books at that time offered for sale the great majority were, of course, imported, and were kept in shops with other goods, as Benedict Arnold combined the business of druggist and bookseller; but, more frequently, the association was of nearer kin—printer, binder, and bookseller, a natural connection, which

continued as a rule for many years, and is illustrated by the familiar instance of Franklin. In 1732, Richard Fry, an Englishman and bookseller of Boston, advertised: "Whereas, it has been the common method of the most curious merchants of Boston to procure their books from London, this is to acquaint those gentlemen that I, the said Fry, will sell all sorts of accompt books, done after the most acute manner, for 20 per cent. cheaper than they can have them from London. * * * For the pleasing entertainment of the polite parts of mankind, I have printed the most beautiful poems of Mr. Stephen Duck, the famous Wiltshire poet. It is a full demonstration to me that the people of New England have a fine taste for good sense and polite learning, having already sold 1,200 of those poems." The first convention of booksellers for the regulation of trade seems to have been held in Boston, 1724; it was for the special purpose of increasing the prices of certain works. Toward the close of the last century bookselling began to take rank among the most considerable commercial pursuits, though it then only foreshadowed its present comparative importance. Works of standard character, involving large expenditures, were undertaken by publishers, who, in such cases, usually subscribed together, as a guarantee for the printer's outlay. The trade was conducted upon established principles, and innovators were held in poor esteem. All these usages were, however, disturbed by competition, and after the publication of the Waverley novels, of which rival editions were issued, the individual members of the trade acted more independently of each other, and their customs afterward partook of a less narrow spirit. The American company of booksellers was founded in 1801. Books were formerly sold in sheets, to be bound as purchasers might desire, a practice which no longer obtains. The universal diffusion of education in America, and the inquiring mental character of its people, not only increased the circulation of books but reduced their price, and the old-fashioned veneration which literary works had once inspired experienced no little modification. Externals became of small consequence to the great body of readers, and works were purchased not so much for preservation as for immediate reading. This is not peculiar to America, for in all the principal publishing countries it appears to be now understood that the proportion of expense for mere externals should, within the limits of good taste and sufficient perspicuity and durability, be reduced to the lowest standard. The practical advantages of cheapness were at first demonstrated by the absence of international copyright, which brought competition to the basis solely of mechanical excellence and lowness of price; and although, for a time, there was a tendency to consult cheapness to the sacrifice of other quite as essential qualities, a reaction, experienced within the last few years, promises to correct that which

the popular appreciation of the truest economy had agreed to condemn. The number of different publishers of American books in the years 1856 and 1857 was 385, principally of New York, Boston, and Philadelphia. Many books emanate from Cincinnati, and the indications are that a large independent trade will, before many years, be established in the West. There are 2 departments of the book publishing business in the United States pretty clearly separated: those who sell books through the retail stores, and those who sell by personal application—the makers of what are technically called trade, and the makers of subscription books—books which buyers are expected to come for, and books which go to them. The regular trade is divided into publishers, jobbers, and retailers. Jobbers purchase of publishers in large quantities, and, consequently, on favorable terms, which enables them to supply retailers at the publishers' rates. Retailers are scattered all over the country, in the cities and smallest villages; in the latter often connecting with their stock of literature the miscellaneous assortment of the country store. Increase of bookselling has led to classification, and the trade has been gradually separating into several divisions or specialties, the principal of which are miscellaneous, religious, scientific, educational, musical, legal, medical, agricultural, and foreign booksellers; but the distinction is by no means fixed or complete. Assuming them for the sake of convenience, we may designate still further subdivisions: the miscellaneous, inclining toward particular classes, as poetry, novels, &c., and the religious, representing the different churches. Beside these, publishers of subscription books may be also divided into those who issue books in small parts, and those who issue in complete volumes. The style in which business is done also varies greatly. Many publishers get out a rather regular succession of works, each of which is advertised to a certain extent, and then abandoned to its own merits and fortune. Others publish few books, but "push" them with great energy. The pushing process is performed through the facilities afforded by the press, and the publisher seeks by every ingenious expedient to arouse public curiosity. Among the greatest successes may be mentioned, "Uncle Tom's Cabin," of which 810,000 copies have been sold; "The Lamplighter," 90,000; "Shady Side," 42,000; "Fern Leaves," 70,000; "Ruth Hall," 55,000; "Alone," "The Hidden Path," "Moss Side," each 25,000; Longfellow's "Hiawatha," 43,000; "Life of Barnum," 45,000; "Life of Amos Lawrence," 23,000; Hugh Miller's works, 50,000; Sears's "Wonders of the World," 100,000; of larger works, "Benton's 80 Years' View," 2 vols. 8vo, 55,000; Kane's "Arctic Explorations," 2 vols. 8vo, 65,000, paying \$65,000 copyright; Harpers' "Pictorial Bible," \$20 a copy, 25,000; and Goodrich's "History of All Nations," 2 vols. 8vo (\$7), 80,000. School books occasionally attain an enormous and permanent

circulation, and their publishers compete energetically for the market. Agents are often employed at great expense to visit the various schools for the purpose of substituting new books for old, receiving little or nothing for the difference in value; though this ruinous practice is becoming discontinued. Of Mitchell's geographical books there is a probable issue of 1,000 per day, and of Davies's mathematical series, 800,000 were circulated in 1857; of Sanders's "Readers" about the same; and many other school-books have an annual sale of from 20,000 to 50,000. The books of Noah Webster have, however, reached the greatest circulation. Of the "Elementary Spelling Book," 35,000,000 have been sold, and its annual issue is over 1,000,000. Webster's dictionaries, of which there are 8 abridgments, have had an aggregate sale of nearly 2,000,000, and about 100,000 are sold annually of the "Primary." The publication of music books has been very successful, more especially collections of church music, or psalm and hymn tunes, glee books, juvenile musical books, and instrumental instructors of all kinds. "The Handel and Haydn Collection," by Dr. Lowell Mason, published 30 years since, has passed through nearly 40 editions, and "The Carmina Sacra," by the same author, has had a circulation of about 500,000 copies, yielding a copyright of about \$50,000. Of late there has been a steady and rapid increase in the issues of books in the more advanced departments, such as works on the science of music, harmony, counterpoint, and the like, but there seems to be little demand for musical belles-lettres. In law and medical bookselling, the United States holds a high rank as compared with other countries. The circulation of these books is very large. A peculiar feature in American bookselling is to be found in agricultural publications. One house in New York is devoted to this department exclusively. It has a list of 100 different works, by 63 authors, of whom about 50 are American. The books are in good demand, especially those on horses and stock; 5,000 of Linsley's "Morgan Horse" were sold in the first 6 months of publication; Allen's "Domestic Animals" has had an issue of 12,000, and Dadd's "Modern Horse Doctor," 14,000. The interest taken in the introduction of the new sugar-canes has exhausted 4,000 of Olcott's "Sorgho and Imphee," and 8,000 of 2 pamphlets on the same subject. A class of books which are occasionally overlooked in connection with this subject are those called cheap publications. These have a very large circulation, frequently as great as 200,000 copies. "The Widow's Walk," by Sue, and "The Dancing Feather," by J. H. Ingraham, with, no doubt, many others, have exceeded that number. At 25 cents per copy, these books are sometimes bought by the public to the extent of \$50,000 each, an amount much beyond that paid for works of higher literary pretensions, published in more elegant style. In addition to all these, we have the

publications of numerous societies, one of which alone, the American Bible Society, issued in the year ending April, 1858, 712,114 copies of the Bible. In Trubner's "Bibliographical Guide to American Literature," the following table is given of the issue of books in the United States in the 12 years preceding 1842:

	Original American.	Reprints.
Biography.....	108	123
American History and Geography.....	118	190
History and Geography of Foreign Countries. 91	126	
Literary History.....	19	31
Ethics.....	19	81
Poetry (in separate volumes).....	108	76
Novels and Tales.....	115	8
Classics.....	71	36

In the preface to the "American Catalogue of Books," by Sampson Low, Son & Co., of London, it is stated that "during 1852, unavoidably including many really published in the preceding 6 months, we find there were 966 new books and new editions, 812 of which were reprints of English books, and 56 translations from other countries. During 1853, 879 new books and new editions, including 398 reprints of English books, and 87 translations. During 1854, 765 new books and new editions, of which 277 were reprints of English books, and 41 translations. During 1855, 1,092 new books and new editions, including 250 reprints of English books, and 88 translations. And during the 6 months to July, 1856, 751 new books and new editions, of which but 102 were reprints of English books, and 26 translations." From a careful computation and analysis of "Norton's Annual Book List for 1855," we have the following:

	Works.	Vols.
Educational.....	189	154
Nat. Hist., Nat. Sciences, Agric., &c.....	65	67
Biography.....	124	159
Essays, Poetry, Fiction, &c.....	776	968
Theology.....	581	567
History.....	76	92
Juveniles.....	92	117
Music.....	43	43
Voyages and Travels.....	29	31
Medicine.....	79	84
Law.....	79	61
Classics.....	13	13
Mechanical Sciences.....	23	24
Miscellaneous.....	94	96
Total.....	2,102	2,338

Of these, which include old and new, 649 were reprints. The foregoing table is confirmed by an analysis of the "Addenda" to Roobach's "Bibliotheca Americana," which includes all the books published in the United States, from January 1, 1856, to March, 1858:

	Works.	Vols.
Educational.....	748	761
Nat. Hist., Nat. Sciences, Agric., &c.....	160	168
Biography.....	313	247
Essays, Poetry, and Fiction.....	1,667	1,914
Theology.....	662	877
History.....	281	276
Juveniles.....	117	151
Music.....	154	154
Voyages and Travels.....	157	160
Medicine.....	188	147
Law.....	28	28
Classics.....	61	63
Mechanical Sciences.....	80	91
Miscellaneous.....	290	317
Total.....	4,886	5,293

* Not ascertained.

Of the 4,886, 1,492, or about 30 per cent., were reprints, about the same proportion as in 1855. From the "Recollections of a Lifetime," by Mr. S. G. Goodrich, a work which contains much valuable information and some curious statistics on bookselling in this country, we extract the following table of the value of books manufactured and sold in the United States in the years 1820, 1830, 1840, 1850:

	1820.	1830.	1840.	1850.
School.....	\$750,000	\$1,100,000	\$2,000,000	\$3,500,000
Classical.....	250,000	350,000	650,000	1,000,000
Theological.....	150,000	250,000	300,000	500,000
Law.....	200,000	300,000	400,000	700,000
Medical.....	150,000	200,000	250,000	400,000
All other.....	1,000,000	1,300,000	2,000,000	4,400,000
Total,	\$2,500,000	\$3,500,000	\$5,500,000	\$12,500,000

The same writer estimates the amount of the production of the American book trade for the year 1856 at about \$16,000,000, which he divides as follows: city of New York, \$6,000,000; rest of the state of New York, \$600,000; Boston, \$2,500,000; New England states, \$600,000; Philadelphia, \$3,400,000; Cincinnati, \$1,800,000; north-western states, \$100,000; District of Columbia, by the government, \$750,000, and the southern and south-western states \$750,000. The amounts of annual importations of books from 1851 to 1857 inclusive, are:

1851.....	\$494,153	1855.....	\$303,371
1852.....	567,715	1856.....	767,303
1853.....	723,231	1857.....	874,404
1854.....	916,839		

A peculiarity of the book business in the United States, is the holding of trade sales—semi-annual auctions, in New York, Philadelphia, and Cincinnati—to which publishers contribute, and which are attended by retailers. These sales have been in successful operation for about 80 years, and annually dispose of books to the amount of from \$600,000 to \$1,000,000.

BOOLAK, BOULAK, or BULAK, an Egyptian town on the Nile, and the port of Cairo; pop. 5,000. Its site was once an island, but that part of the river which separated it from Cairo has been filled up. In 1799 Boolak was burned by the French. Mehemet Ali rebuilt it, and established extensive cotton-spinning, weaving, and printing works, a school of engineering, and a printing establishment, from which is issued a weekly newspaper in Arabic. The town contains a naval arsenal, a dockyard, and a custom-house, and is surrounded by the country residences of numerous Egyptian grandees.

BOOLEKUMBA, a territory of the Macassar nation, in the S. W. peninsula of Celebes, bounded N. by Boni, E. by the bay of Boni, S. by the Java sea, and W. by Bonthain; area 190 sq. m.; pop. 15,000. It was the scene in 1824 of many severe conflicts between the Dutch and the Bugis and Macassar tribes. The natives repulsed the Europeans with severe losses in 4 different engagements; but were finally subdued by an overwhelming military and naval force commanded by Gen. Van Geen. Boolekumba, chief town of this territory, situated on the coast, opposite Saleyer, lat. 5° 33' S., long.

120° 13' E., is the residence of a Dutch *gezaghebber*, or superintendent.

BOOLUND SHAHUR, a British district of Hindostan, under the lieutenant-governorship of the N. W. provinces, between lat. 28° 8' and 28° 43' N., long. 77° 28' and 78° 32' E.; bounded N. by Meerut, S. by Alighur, E. by Moradabad and Budaon, W. by Goorgaon and Delhi; length from N. W. to S. E. 80 miles; breadth from N. E. to S. W. 57 miles. It has a remarkably level surface, with scarcely an inequality, except a ridge rising gradually between the courses of the Jumna and the Ganges, which, with the Hindon and the East Kali Nuddee, are the principal rivers of the district. The climate is subject to extremes unusual in that latitude. In the latter part of spring and the beginning of summer the heat is oppressive, but in winter the temperature frequently falls below the freezing point, and ice forms even under shelter of a tent. Domestic quadrupeds attain scarcely half the size of those in Bengal and Bahar. Cotton, however, grows well, and constitutes the staple production of the soil, but the commercial advantages which this is supposed to offer are almost wholly neglected. The other products are indigo, sugar, tobacco, wheat, barley, millet, and several kinds of pulse. The pop. is 778,842, of whom 633,696 are Hindoos, the remainder Mussulmans and others. Boolundshahur formed part of the territory acquired by Perron, a French adventurer, who went to India as a common sailor, entered the service of the Mahratta chief Sindia, and by the exercise of abilities of no ordinary stamp, rose gradually to the highest offices in the gift of his patron, and finally became the sovereign of a petty state, and the commander of a body of well disciplined soldiers. With his assistance Sindia was enabled to make war upon the peishwa, and drive him from his capital, Poonah. This circumstance gave the British a long-coveted opportunity to break up the power of the victorious adventurer, whose rapid rise and ambitious plans they could not view without alarm. They willingly granted the peishwa's request for assistance, and several battles were fought in 1803, in which the British were almost always victorious. The last victory, gained by Lord Lake near Delhi, Sept. 14, gave the death-blow to the French state, though the war was not concluded for some time afterward. Perron made terms with the English, and retired into private life at Lucknow with his family and effects. A treaty was concluded with Sindia, at Serjee Angengau, Dec. 30, 1803, by which Boolundshahur and other possessions were ceded to the East India company. — **BOOLUND SHAHUR**, or **BURRUN**, a town of the above district, situated on the Kali Nuddee, 40 miles S. E. of Delhi, was the scene of a revolt of native troops, May 20, 1857. A spy having been seized by the troops was given up to the authorities, and on proof of his guilt was hanged. But unfortunately the man was a Bramin, and

his ignominious death so excited the very soldiers who had apprehended him, that they marched off to Alighur and incited their comrades there to mutiny. The English officers fled to Agra. About Oct. 1, Col. Greathead attacked the mutineers near here, silenced their artillery, drove them from a strong position, and charged and pursued them through the town with considerable loss on both sides.

BOOM (Dutch, *boom*, a beam), in sea language, a long spar for spreading out the clew or corner of certain sails, as the jib boom, studding-sail boom, main boom, &c.—Also, an iron cable or barricade of spars joined together and stretched across a river or harbor, to prevent the passage of the enemy's ships.

BOOMERANG, **BOMERANG**, and **WOMERA**, are different modes of spelling the Australian name of a native weapon of war, used also in the chase. It consists of a heavy wooden club, about 80 inches long, 3 wide, and 1 inch thick; flat on one side, and convex on the other; bent, without moving the flat side out of its own plane, either into an arc or into an obtuse angle. This club is thrown, flat side down, spinning with great velocity, and it will either return to its owner, or turn to the right or left, according to its first position. It skims upon the air, like a bird with the wings expanded; the rotation causing the plane of rotation to resist change of direction, and thus avoiding those sudden and capricious movements observed in flat stones or plates of metal when thrown edgewise through the air. Naval architects have attempted to apply the principle of the boomerang to screw steamships, but so far the idea has not found favor with ship-builders.

BOOMING, in sea language, is the application of the boom to the sails in order to catch more of the breeze, and quicken the speed of the ship.

BOONDEE, a small territory in Rajpootana, Hindostan, under the political superintendence of the governor general, between lat. 24° 58' and 25° 55' N., and long. 75° 23' and 76° 30' E.; bounded N. by Jeypoor, E. by Kotah, S. by Sindia's territory, W. by Odeypoor. Length, 85 miles; breadth, 50 miles; area, 2,291 sq. m. Pop. estimated at 229,100, or 100 to the sq. m., which is the average density of population in British Rajpootana. A range of mountains traverses it from N. E. to S. W., on each side of which the surface is level. There are no large rivers within the territory, but the Chumbul, a navigable affluent of the Jumna, forms part of its E. boundary. The climate is unhealthy, fevers, rheumatism, ophthalmia, and bronchial affections being very prevalent. The majority of the inhabitants are Meenas, a lawless predatory tribe, dwelling chiefly among the mountains, and supposed to be the early possessors of the district. The dominant tribe, however, to which the sovereign belongs, is that of the Haras, which has given birth to many famous men. The military force at the disposal of the monarch, including feudatories and the police,

is 6,170 men. The revenue, derived chiefly from taxes on land and transit duties, amounts to about £30,000. There is no fortress of any importance except that of Nynwah, which Bulwunt Sing obtained by bribery in 1806, and defended for several months. The territory subject to the rajah of Boondée was anciently of much greater extent than at present, and was called Haraoti, from its dominant tribe. It is said to have been wrested from the Meenas by Rao Dewa, in 1842. It was dismembered by Jehangir, about the end of the 16th century, and the territory of Kotah set apart for a descendant of a former rajah. In 1804, during the war between the British and Mahrattas, in which Col. Monson was defeated with so much loss by Holkar, the rajah of Boondée attached himself warmly to the British cause, gave the retreating army free passage through his territories, and assisted it as far as possible. This conduct naturally aroused the resentment of the Mahratta chief, who seized upon his capital, and exacted of him a tribute. Notwithstanding no return had been made for his former services, he espoused the British cause again in 1817 during the Mahratta and Pindaree wars, at the conclusion of which the East India company rewarded him by remitting the tribute which Holkar's defeat had now placed at their disposal, and restoring the lands which had been wrested from him in 1804. A tribute formerly paid by Boondée to Sindia was transferred at the same time to the British. The ruler who had proved so true an ally died in 1821, and was succeeded by his son, then about 11 years of age. During his minority the regency was exercised by his mother, under whose government the education of the prince and the welfare of the state were alike neglected. By the treaty of Gwalior, Jan. 1844, the management of about two-thirds of Patun, a part of Boondée which had been in the possession of Sindia for many years, was made over to the East India company.—BOONDEE, the capital, is situated in a valley surrounded by rocky hills, 22 miles N. W. of Kotah, and 245 miles S. W. of Delhi. It is encompassed by walls with 8 massive gates, and inhabited chiefly by native Haras. Its advantages as a commercial town are very few, but the beauty of its situation, its antiquity, numerous temples, handsome fountains, and palaces, invest it with considerable interest. The residence of the rajah, which is not one edifice merely, but a collection of splendid structures reared by different sovereigns, and each bearing the name of its founder, stands on the slope of a hill overlooking the town. The town is divided into old and new Boondée, the first of which is in a state of decay.

BOONE, the name of counties in several of the United States. I. A county of Virginia, named from the pioneer Daniel Boone, near the western border of the state, was set off from Kanawha, Cabell, and Logan counties, in 1847. Its area is 525 sq. m. Its surface, which is drained by the head waters of Little Coal creek, a tribu-

tary of the Great Kanawha, is hilly, and to a great extent covered with forests. The soil, which is very fertile in some places, is largely devoted to the raising of live stock, and the culture of wheat. Its real estate was assessed, in 1850, at \$228,283; in 1855, at \$425,441, showing an increase of 86 per cent. Pop. in 1850, 8,287, of whom 183 were slaves. II. A northern county of Kentucky, with an area of 800 sq. m., separated from Ohio and Indiana by the Ohio river, which flows along its northern and western border for a distance of about 40 miles. The surface is hilly, and the soil, resting upon a basis of blue limestone, produces abundant crops. The harvest, in 1850, amounted to 1,056,650 bushels of corn, 71,749 of wheat, 62,719 of oats, 298,152 lbs. of tobacco, 85,027 of wool, and 19,074 of flax. There were 28 churches, and 650 pupils attending public schools. The county was organized in 1798. Capital, Burlington. Pop. in 1850, 11,185, of whom 2,104 were slaves. III. A central county of Indiana, containing 408 sq. m., and drained by Eagle and Sugar creeks. The surface, which is either level or moderately uneven, was originally covered by dense forests of oak, beech, sugar maple, ash, and walnut, much of which has been cleared away during the past 10 or 15 years. The soil is deep and fertile. In 1850, it produced 488,045 bushels of corn, 76,289 of wheat, 46,187 of oats, and 4,259 tons of hay. Capital, Lebanon. Pop. in 1850, 11,631. IV. A northern county of Illinois, bordering on Wisconsin, intersected by Kishwaukee river, and comprising an area of 270 sq. m. It has a rolling surface, diversified by fertile prairie lands and forests. The productions, in 1850, were 248,307 bushels of wheat, 159,114 of corn, 141,825 of oats, 12,676 tons of hay, and 173,966 lbs. of butter. There were 6 churches, and 1,848 pupils attending public schools. Pop. in 1855, 11,994. Capital, Belvidere. V. A northern central county of Missouri, containing 648 sq. m., bounded on the S. W. by the Missouri river, and intersected by 2 of its tributaries. The surface is slightly uneven, and consists mainly of prairies interspersed with forests of considerable extent. The soil is uniformly productive, and well tilled. Stone coal and limestone are the chief minerals. In 1850, the county produced 1,001,983 bushels of corn, 70,168 of wheat, 80,543 of oats, 584,949 lbs. of tobacco, and 51 tons of hemp. Capital, Columbia. Pop. in 1856, 17,248, of whom 4,712 were slaves. VI. A western central county of Iowa, bisected by the Des Moines river, and having an area of 576 sq. m. Forests occupy a considerable portion of the surface; beds of coal are found in several places, and the soil is highly productive. In 1856, it yielded 2,865 tons of hay, 16,646 bushels of wheat, 18,907 of oats, and 244,025 of corn. Capital, Booneville. Pop. in 1856, 8,518.

BOONE, a village situated in a mountainous district of North Carolina, Watauga co., 200 miles W. from Raleigh. The cele-

brated Daniel Boone, from whom the place derived its name, once resided in this vicinity.

BOONE, DANIEL, the pioneer of Kentucky, born in Bucks co., Penn., Feb. 1785, died Sept. 26, 1822. He was one of 11 children. His father, whose name was Squire Boone, emigrated from England, and when Daniel was a very small boy removed with his family from Bucks into Berks co., not far from Reading. This was then a frontier settlement, exposed to Indian assaults. It abounded with game, and thus, from his earliest years, Daniel was accustomed to a life in the woods, and formed an intense love for uncultivated nature. His education was confined to a knowledge of reading, writing, and arithmetic. When he was about 18 his father removed to North Carolina, and settled on the waters of the Yadkin. Here Daniel married Rebecca Bryan, and for some years followed the occupation of a farmer, but about 1761 we find that his passion for hunting led him, with a company of explorers, along the wilderness at the head waters of the Tennessee river. In 1764 he joined another company of hunters on the Rock Castle, a branch of the Cumberland river. He now became dissatisfied with his mode of life in N. C. The customs and fashions of the colony were rapidly becoming luxurious; the rich were exempt from the necessity of labor, the industrious but poor farmer came to be looked upon with contempt, and the people were much oppressed by taxes. Boone had probably imbibed that chronic hatred of law forms which lasted through life, and the neglect of which, in securing his titles to land, reduced him to poverty on more than one occasion. In 1767 a backwoodsman named John Finley made an excursion further west than had before been attempted, and returned with the most glowing accounts of the border region of Kentucky, which, as it abounded with game, he represented as a hunter's paradise. Boone became at once anxious to visit it, but it was many months before he could make his arrangements to do so. At length a party of 6 was formed, of which he was the leader. In his own words: "It was on the 1st of May, in the year 1769, that I resigned my domestic happiness for a time, and left my family and peaceable habitation on the Yadkin river, to wander through the wilderness of America in quest of the country of Kentucky." June 7, in the same year, they reached an elevation from which they beheld the whole region watered by the Kentucky river and its tributaries. At this point they halted and resolved to hunt the buffalo and reconnoitre the country. Their site was on the waters of the Red river, a branch of the Kentucky, and, as well as can now be ascertained, was within the present limits of Morgan co. They hunted until December without seeing a single Indian, although they were continually on the alert for them. They then separated into parties, Boone and a man named Stewart keeping company, and, on Dec. 22, these 2 were surprised and captured by Indi-

ans, who robbed them and kept them prisoner for 7 days, when they managed at night to make good their escape. Early in the next month Boone and Stewart were gratified by the arrival in the wilderness of Daniel's brother Squire and another hunter, from N. C., bringing tidings of the family at home and a much-needed supply of powder and lead. Soon after this event Stewart and Boone were again attacked by Indians. Boone escaped, but his companion was shot and scalped, and the man who came with Squire having perished in the woods from some unknown cause, the 2 brothers were left alone together in the vast wilderness. On May 1, it was decided that Squire, the younger brother, should return for supplies, while Daniel should remain to take care of and increase the store of peltry. They parted, and until July 27, when Squire returned, Daniel remained in utter solitude, without bread, salt, or sugar. The brothers then continued their explorations over other parts of Kentucky, until March, 1771, when, taking as much peltry as their horses could carry, they returned to their families on the Yadkin, Daniel having been absent about 2 years, during which time he had seen no human beings but his hunting companions and the hostile Indians. He was now anxious to remove to Kentucky, and, although his wife and children were easily persuaded to do so, 2 years elapsed before he could make the necessary arrangements. He sold his farm, and, on Sept. 25, 1773, the 2 brothers, with their families, set out for Kentucky. At Powell's valley, through which their route lay, they were joined by 5 families and 40 men well armed, but on approaching Cumberland gap, near the junction of Virginia, Kentucky, and Tennessee, they were attacked by Indians, and were forced to retreat 40 miles to Clinch river, leaving 6 of their party slain, among whom was Boone's eldest son, James. The emigrants were much disheartened, and Boone remained at Clinch river until June, 1774, when Gov. Dunmore sent him a message to proceed to the wilderness of Kentucky, and conduct thence a party of surveyors who were believed to be in danger from the Indians. This undertaking was successful, but no incidents of it have been preserved, excepting that Boone was absent 62 days, in which he travelled on foot 800 miles. While he was gone to Kentucky the Shawnees and other Indians N. W. of the Ohio river became hostile. Boone was appointed to the command of 3 contiguous garrisons, with the commission of captain, and, having fought several battles and defeated the Indians, he returned to his family on Clinch river and spent the next winter in hunting. He was shortly after employed by the Transylvania company, established to purchase lands in Kentucky, to explore, mark, and open a road from settlements on the Holston to the Kentucky river. In the face of great dangers this was accomplished, and on April 1, 1775, a site having been selected on the bank of the Kentucky river, the party

erected a stockade fort, and called it Boonesborough. On his return to Clinch river Boone soon removed his family to the new settlements, and says: "We arrived safe, without any other difficulty than such as are common to this passage, my wife and daughters being the first white women that ever stood on the banks of Kentucky river." The winter and spring of 1776 wore away without any particular incident, as the Indians, though by no means friendly, made no direct attack on the stations. July 14, a daughter of Boone, with 2 female companions, carelessly wandered out of the stockade fort and crossed the river in a canoe opposite Boonesborough at a late hour in the afternoon. Unconscious of their danger, they were splashing the water with paddles, nor perceived in their play that the canoe was drifting close to the opposite shore. Five Indians were there lurking in the bushes, and one of them crawled down the bank, seized the rope hanging from the bow, and turned the canoe instantly up stream out of sight of the fort. The shrieks of the captured girls aroused the garrison, but no attempt could be made to rescue them, as their only boat was gone, and night came before Capt. Boone and his companion Callaway, whose daughters had been seized, returned and made arrangements for pursuit. The next morning Boone and his companions followed upon the trail of the Indians, and in the course of the day discovered them as they were about building a fire to cook, surprising them so suddenly that they had not time to murder their captives, as they doubtless would otherwise have done, and the 8 girls were restored to their families. During the whole of the year 1777 Boone was employed with his command in repelling the attacks of the Indians, who were incited to the most savage deeds of cruelty by the British during the revolutionary war. His services were of incalculable advantage to the new settlements. Jan. 1, 1778, the people suffering greatly for want of salt, he headed a party for the lower Blue Licks to manufacture it, and, on Feb. 7, while at some distance from the camp, he was surprised and made prisoner by a party of 100 Indians. Again in this instance his consummate knowledge of the red man's character saved him and his friends. He ingratiated himself in their regard, and obtained favorable terms for his party at the Licks, who became prisoners of war under the promise of good treatment. He knew that the Indians would march to attack Boonesborough, and that if he and his party resisted they would all be murdered and those at the fort massacred, as no warning could reach them. He was conducted to old Chillicothe, and thence to Detroit, where he was kindly received by the English commander, Gov. Hamilton. In order to baffle his captors, he pretended to be very much pleased with his mode of life among the Indians, went through the form of adoption by them, having his hair pulled out excepting the scalp lock, "his white blood washed out" in the

river, and his face painted. Being allowed under certain restrictions to hunt, on June 16, he went forth as usual, and when out of view started direct for Boonesborough, more than 160 miles distant, which he travelled in less than 5 days, during which time he ate but one regular meal, on a turkey which he shot after crossing the Ohio. He anticipated great difficulty at the river, as he was a poor swimmer, but accident threw in his way an old canoe, which bore him safe to the Kentucky shore, and he reached Boonesborough to warn the garrison. All supposed him to be dead, and his wife, under that impression, had returned with her children to North Carolina. The fort was at once put in complete order for defence, and on Aug. 8 it was besieged by 444 Indians, led by Capt. Duquesne and 11 other Canadians, having French and British colors. Summoned to surrender, Boone replied with defiance, and after a savage attack upon the fort the assailants, 6 times greater in number than the garrison, raised the siege, leaving 37 of their party killed and many more wounded. For Boone's surrender of his party at the Licks and for taking his officers outside the fort at Boonesborough, to make, if possible, before the attack commenced, a treaty, by the invitation of the Indians, he was court-martialled. Boone conducted his own defence, was triumphantly acquitted, and promoted to the rank of major. In 1778 he went to North Carolina to see his family. The next year, having invested nearly all his little property in paper money to buy land warrants, and having, beside his own, large sums of money to invest for other people, he was robbed of the whole, about \$20,000, on his way from Kentucky to Richmond, where the court of commissioners was held to decide on Kentucky land claims. In 1780 he returned with his family to Boonesborough, and in October of that year his brother, on a hunting excursion with him, was killed and scalped by the Indians, and Boone himself narrowly escaped. The Indians being exceedingly troublesome, a large party of militia was formed to follow and punish them, who, against Boone's counsel, suffered themselves to be drawn into an ambuscade, and the disastrous battle of the Blue Licks followed, in which Boone lost another son and had a brother wounded. At the close of the revolutionary war Col. Boone returned to the quiet life of his farm, and to his passion for hunting. In 1792 Kentucky was admitted into the union as a sovereign state, and as courts of justice were established, litigation in regard to land titles commenced, and was finally carried to great lengths. From defective titles, Boone, with hundreds of others, lost the lands he possessed, with their valuable improvements, and thus, after the vigor of his life was spent, he found himself without a single acre of the vast domain he had explored and fought to defend from savage invaders. Disgusted with his treatment, he resolved, from his hatred of law and lawyers, to abandon Kentucky and move

to the far west, which he did in 1795. He settled first on the Femme Osage, about 45 miles W. of St. Louis, where he remained until 1804; he then removed to the home of his youngest son until 1810, and finally went to live with his son-in-law, Flanders Callaway. As the country, at the time of his removal, was under the dominion of Spain, on July 11, 1800, he was appointed commandant of the Femme Osage district; and as his fame had preceded him, 10,000 arpents, or about 8,500 acres, of choice land were marked out on the N. side of the Missouri river, and given to him for his official services. This princely estate he also subsequently lost, because he would not take the trouble to go to New Orleans to complete his title before the immediate representative of the Spanish crown. Having left Kentucky in debt, he was much troubled for a while by ill success in hunting, but at length he obtained a valuable store of peltry, turned it into cash, went to Kentucky, without book account, paid every one whatever was demanded, and on his return to upper Louisiana with but half a dollar left, said that he was ready to die content. In 1812 he petitioned congress to confirm the title to his claim of 1,000 arpents of land, which he had neglected to have done in proper form, and was in danger of losing, as he had every thing else. He sought the aid of the legislature of Kentucky, and his petition was successfully urged in congress, in requital for his eminent services. He continued to hunt occasionally as long as his strength remained, but was obliged to give up his rifle several years before his death. Mr. Chester Harding, the eminent American artist, who painted, in Boone's last days, in 1820, the only portrait of him ever taken, informs us that his first sight of the old pioneer found him lying in his bunk in the cabin, engaged in cooking a venison steak on a ramrod. His memory of immediate events was very defective, but of past years as keen as ever. He was quite feeble, but able to walk out with Mr. Harding every day. This portrait now hangs in the state house of Kentucky. He died surrounded by his children and descendants, some of the 5th generation, in the 88th year of his age, and was buried by the side of his wife, who had been dead 7 years, in a coffin which he had provided and kept for a long time beneath his bed. Aug. 20, 1845, the remains of both, having been exhumed, were deposited with appropriate ceremonies in the cemetery of Frankfort, Kentucky. In all the relations of private life Boone was a model for imitation. In spite of his many Indian encounters, he was a lover of peace, modest in disposition, of incorruptible integrity, moral, temperate, and chaste. Of no professed creed, his nature was sincerely religious, and in the vast solitudes of the west he humbly revered a bounteous Creator.

BOONESBOROUGH, a decayed village of Madison co., Kentucky. In 1775 the first fort erected in the state was built here by Daniel Boone. In Boonesborough was convened, tow-

ard the end of last century, the first legislative assembly of the western states.

BOONEVILLE, a flourishing city, and capital of Cooper co., Mo., situated on the right bank of the Missouri river, 48 miles N. W. of Jefferson City, in the midst of a rich farming region, and in the vicinity of iron, lead, and coal mines, and of marble and limestone quarries. The grape is extensively cultivated, and promises to become an important article of export. The advantages of Booneville as a commercial place have drawn to it the greater part of the trade of S. W. Missouri, of a portion of Arkansas, and of the Cherokee nation. It has a handsome court-house, 8 churches, 8 or 4 newspaper offices, 2 ropewalks, and a number of stores. For health, it is unsurpassed by any city of the union. It was settled by Daniel Boone; pop. in 1850, 2,386.

BOONTON, an important town of Morris co., N. J. It contains a large iron manufactory, which consists of a blast furnace, rolling mill, and nail factory, forming a most complete and extensive establishment.

BOO-REGREB, BOU-REGREB, or BU-REGREB, (anc. *Sala*), a river of Morocco, emptying into the Atlantic at Rabatt. It is 500 yards wide at its mouth, and has an imperial dock yard.

BOORGHAS, BOURGHAS, BOUGHAS, or BURGHAZ, a town of European Turkey. It is situated on a promontory in the gulf of Boorghas, in the Black sea, is neat and clean, has an extensive manufactory of clay pipes and bowls, and a good trade in iron and provisions. The gulf of Boorghas is 14 miles long and from 5 to 12 fathoms in depth. Pop. of the town, 6,000.

BOORHANPOOR, or BOORHANPOOR, a town of India, and the former capital of Candeish, in the territory of Gwalior, 180 miles S. S. E. of Oojein; pop. about 80,000. It is built on the north bank of the Taptee, and when seen from the other side of the stream presents quite an imposing appearance. A brick rampart, of no great strength, extends around it in the form of a semicircle, the diameter stretching along the river bank, which is here 60 or 70 feet high. About the centre of this wall stands a palace of brick, called from its color the Red Fort. It was built by Akbar, in a style of regal magnificence, with pleasure gardens, halls of white marble, and a mosque; but most of its grandeur has departed, and it is fast falling to ruin. The town itself contains but one edifice of much pretension, which is a mosque raised by Aurungzebe. The houses of some of the wealthy merchants, however, are good and commodious. The streets are wide and regular, water is supplied in abundance, and the town has the reputation of being one of the best constructed, as well as one of the largest, in the Deccan. The population is of mixed character, embracing Mohammedans, Bramins, and others. The trade is almost monopolized by a Mohammedan tribe called the Borahs, who came originally from Arabia, and still retain the dress and many of the

customs of that country. They occupy a particular quarter of the town which at night is closed to all other persons, and worship in a mosque of their own. They manufacture muslins, flowered silks, and brocades, and in the time of Tavernier (about 1665) used to export considerable quantities of their fabrics to Persia, Egypt, Turkey, Russia, and Poland, though even then Boorhanpoor had passed the meridian of its prosperity. The vicinity is noted for excellent grapes. This town was founded in 1414 by Malik Nasir, ruler of Candeish, and for a long time was the capital of the country. In 1599 it was besieged and taken by Akbar, king of Delhi, who reduced Candeish to the level of a province of his empire, and chose for governor of Boorhanpoor either one of his near relatives, or some high officer of the court. It was plundered by the Mahrattas in the reign of Aurungzebe in 1685, and in 1720 was wrested from the empire of Delhi by Azaf Jah or Nizam-ul-mulk, viceroy of the Deccan. It was subjugated by Madhjee Sindia in the latter part of the 18th century; was occupied by the British under Col. Stevenson, in 1808, restored the same year, and finally with the whole of Sindia's territory, or Gwalior, passed under British protection in 1844.

BOORLOS, or BOURLLOS, a lagoon of lower Egypt, in the delta of the Nile. Its length is 88 miles, its average breadth 17 miles. It is very shallow, and navigable only along its north shore. Several canals connect it with the Nile, and a single channel with the Mediterranean.

BOORNABAT, or BOURNABAT, a town of Asia Minor, about 4 miles from Smyrna, and at the head of the gulf of that name. It contains the country houses of many of the merchants and consuls of Smyrna.

BOORO, BOURO, or BOEROR, an island of the Malay archipelago; area about 1,970 sq. m.; pop. 60,000. The surface is mountainous; the soil is fertile and well suited to the production of rice, sago, fruits, and dye-woods. The island is well watered, and abounds with deer and babyroussa hogs. Fort Defence, on the E. side, is a Dutch station; on the north is Cajeli bay, where plentiful supplies of provisions are procurable.

BOOROGIRD, BURUGIRD, BOORJERD, or BOORJIRD, a Persian town, in a fertile valley of Irak-Ajeme; pop. 12,000.

BOOT, a leathern covering for the leg, terminating in a shoe; originally so called from its resemblance to a sort of leathern bottle for carrying liquors, called in Spanish *bota*, and in old French *boute*.—Also an instrument of torture made of boards lashed round the leg, so as to crush it; or a buskin drawn tight on the leg when wet, and then dried by the fire so as to contract and pinch the victim. The boot was a favorite mode of punishment in Scotland during the 15th and 16th centuries.—Also a box covered with leather in the fore part of a stage or mail coach.

BOOTAN, or BHOTAN, an independent territory of Hindostan, situated on the N. E. frontier of Bengal, among the Himalaya mountains,

which separate it from Thibet on the N., and branch out over a great part of its surface. It is bounded E. by the territories of savage mountain tribes, S. by the British districts of Assam and Goalpara, and the native state of Cooch-Bahar, and W. by the native state of Sikkim; area, 19,000 sq. m.; greatest length from E. to W. 230 miles; breadth, 120 miles. Some of the highest summits of the Himalaya chain lie on its N. border, from which the surface sinks by steps to the Bramapootra. The rivers are all rapid, and have numerous cataracts. The most important stream is the Tchin-tchou, which traverses the country from north to south, and falls into the Bramapootra after a course of 150 miles. In the lower part of the country the vegetation presents the usual features of the tropics; higher up occur noble forests of pine, birch, maple, and yew, while the hills are covered with fruits common to Europe, such as apples, apricots, and berries. The soil is usually well tilled and irrigated with considerable skill. Every plot of arable land is improved, and rice, wheat, barley, turnips, gourds, and melons are raised in large quantities. The trade is chiefly with Bengal and Thibet; the exports comprise rice, wheat, flour, horses, linen, musk, and fruits; and the imports, cattle, hogs, dried fish, tobacco, cotton, woollen, indigo, tea, gold, silver, and embroideries. The inhabitants are tall, with smooth, dark skins, high cheek-bones, and the broad faces common to the Chinese and Tartars. Though courageous when attacked, they are by no means a warlike people, have little knowledge of military art, and devote their energies chiefly to agriculture. Those living near streams which are much subject to overflows are often afflicted with goitre. The ordinary dress is of woollen cloth. The religion is Buddhism; the country has abundance of priests, and supports multitudes of monasteries. Morality, however, is at a very low ebb. Polyandry and polygamy are both general, and no religious ceremony is observed in marriage. The sovereign, in secular as well as in ecclesiastical matters, is a personage called the dharma rajah. He is believed to be an incarnation of the divinity, and being consequently above the consideration of mundane affairs, leaves the government of the state to an official known as the deb rajah, reserving, however, the right to appoint 1 member of the council of 8, whom the deb rajah is obliged to consult in all matters of consequence. The passes from the mountains to the low countries are commanded by fortresses under the charge of officers termed soobahs, who occasionally vary the monotony of their solitude by inroads upon neighboring states. The frequent incursions made upon British territory occasioned the sending out of a mission under Capt. Pemberton in 1887, on the failure of which to effect a cessation of the grievances, the passes were attacked and brought under British control. The low countries are divided into small

police and revenue districts, each under a superintendent, and the whole system of government is said to be thoroughly bad and corrupt. Bootan is noted for the number of its wooden and iron bridges, and for the ingenuity displayed in their construction. The houses are seldom more than 1 story high, and the aqueducts are simply trunks of trees hollowed out. The chief towns are Tassisdun, Wandipoor, Poonakha, Ghassa, Paro, and Murichom. In ancient Braminical legends Bootan is called Madra. Up to the last century, however, little is known with regard to its political condition. In 1772 the Booteahs ravaged the territory of Ooch-Bahar, whereupon the latter state applied to the British for assistance, which being granted, the rajah of Bootan was attacked within his own dominions, defeated, and forced to solicit aid from Thibet. By the mediation of the latter state, a treaty of peace was concluded in 1774.

BOOTES, in astronomy, a constellation in the northern hemisphere, from the Greek *βουρ*, an ox. Bootes means an ox-driver. The modern figures represent Bootes as a man with a club in the right hand, and in the left the leash which holds 2 hunting dogs.

BOOTH, BARTON, an English actor, born in Lancashire in 1681, died May 10, 1738. He was of an ancient family, being allied to Henry Booth, earl of Warrington, and was educated at Westminster, where the applause which his performance of the part of Pamphilus in the *Andria* of Terence called forth, first suggested to him the idea of making the stage a profession. Upon being removed to Cambridge, where he was to be educated for the church, he ran away and joined a company of strolling players. He was persuaded to return to his family, who forgave him, but again found means to escape their vigilance, and made his debut with great success at Bartholomew Fair. His first appearance upon the legitimate stage was at Dublin in 1698, where his performance of the part of Oronoko at once stamped him as a great tragic actor. An engagement at Drury Lane, then under the management of Betterton, succeeded in 1701, and for 25 years Booth was a reigning star on the London boards. He took the part of Oato at the first performance of Addison's tragedy of that name, and by his admirable acting added much to the success of the play. One of his most famous parts was that of the ghost in Hamlet, which he rendered with an effect almost appalling. No actor on the British stage has been more popular, or more courted by the rich and noble for his virtues or his talents. He retired from the stage in 1729; the last 4 years of his life were passed in alienation of mind caused by a fever.

BOOTH, SIR FELIX, a public-spirited Englishman, born 1775, died 1850. He was head of the firm of Booth and company, distillers in London, and for his munificent donation of £20,000 in 1827, for promoting the arctic expedition under Sir John Ross, was raised

to a baronetcy in 1834. That expedition, which lasted from 1829 to 1833, resulted in the discovery of the true position of the north magnetic pole, and of the large tract of country called Boothia Felix, from the liberal donor of the requisite funds.

BOOTH, JUNIUS BRUTUS, an English tragedian, born in London, May 1, 1796, died on the passage from New Orleans to Cincinnati, Dec. 1852. After fulfilling engagements at Deptford, near London, and other places, and even performing at Brussels, in 1814 he made his debut at Covent Garden theatre, in London, as Richard III. His personal resemblance to the crookbacked tyrant conformed exactly to the traditions of the stage, and his personification of the character was in other respects so striking that he competed successfully with Edmund Kean, then just rising into fame. The managers of Drury Lane induced him to act there in the same plays with Kean; but when, after a few nights, he was again announced at Covent Garden, his appearance was the signal for a serious theatrical riot, which resulted in driving him for a time from the London stage. In 1821 he made his first appearance in the United States, at Petersburg, Va., and in New York, at the Park theatre, in the succeeding year, on both of which occasions he assumed his favorite character of Richard III. From that time until the close of his life he acted repeatedly in every theatre in the United States, and in spite of certain irregular habits, which sometimes interfered with the performance of his engagements, enjoyed a popularity which a less gifted actor would have forfeited. During the latter part of his life he resided with his family at Baltimore, making occasional professional excursions to other cities. He had just returned from a lucrative tour to California when he died. The range of characters which Booth assumed was limited, and was confined almost exclusively to those which he had studied in the beginning of his career. He is most closely identified with that of Richard, in which, after the death of Edmund Kean, he had no rival. Among his other most familiar personations were Iago, Shylock, Hamlet, Sir Giles Overreach, and Sir Edmund Mortimer. In his peculiar sphere—the sudden and nervous expression of concentrated passion—as also in the more quiet and subtle passages of his delineations, he exercised a wonderful sway over his audience, and his appearance upon the stage has been known to awe a crowded and tumultuous house into instant silence. His presence and action, notwithstanding his short stature, were imposing, and his face, originally moulded after the antique type, was capable of wonderful expression under the influence of excitement. Several of his children have inherited a portion of his dramatic talent, and are now prominent actors on the American stage.

BOOTHAUK, a fortified village of Afghanistan, at the commencement of a series of defiles between Cabool and Jelalabad. It was here

that the Afghans began their attack upon the British army, in 1842, during the disastrous retreat from Cabool. Concealed amid the rocks and woods which shut in these defiles, the natives poured down a deadly fire upon the English troops which literally annihilated them. The pass of Boothauk is 5 miles long, and in its narrowest parts, where it is but 50 feet wide, is hemmed in by perpendicular cliffs 500 feet high.

BOOTHBAY, a township of Lincoln co., Me., between the Damariscotta and Sheepscot rivers, and having the ocean on the south. Its harbor is one of the best on the coast, and is never frozen over in the winter. The inhabitants are extensively engaged in ship building, the foreign and coasting trade, and the fisheries. About 100 vessels are, either wholly or in part, owned here. Ferries connect the town with Bristol and with Southport, an island in the bay. Beside a Congregational church and several stores, Boothbay has several tide-mills for grinding and sawing. Pop. in 1854 about 3,000.

BOOTHIA FELIX, an insular portion of British North America, between lat. 69° and 75° N., and long. 92° and 97° W. It was discovered by Capt. James Ross, and named by him in honor of Sir Felix Booth. Capt. Ross here determined the position of the magnetic pole.

BOOTHIA GULF, a continuation of Prince Regent inlet, in British America. It separates Boothia Felix from Cockburn island and Melville peninsula, is about 810 miles in length, and from 60 to 100 miles broad.

BOOTON, an island in the eastern archipelago, S. E. of Celebes, lat. 5° S., long. 123° E. It is governed by its own prince; the inhabitants are Mohammedans. There is a bay on the E. side of the island, into which, in calm weather, vessels are liable to be drawn by the current, which is so strong that once fairly in, it is said, they can only escape in the western monsoon.

BOPP, FRANZ, the founder of the science of comparative philology, born at Mentz, Sept. 14, 1791, studied in Paris, London, and Göttingen, has been, since 1820, professor of oriental languages at Berlin. His earliest writings are grammatical works on the Sanscrit language, and editions of Sanscrit poems. Chief among these are his *Ausführliches Lehrgebäude der Sanskritsprache* (Berl. 1827), and *Glossarium Sanskritum* (Berl. 1830, 2d ed. 1847). These works have done much toward facilitating the study of this most difficult of all languages. As a mere orientalist, however, he is only one of the many great scholars in Europe; but his *Vergleichende Grammatik des Sanskrit, Zend, Griechischen, Lateinischen, Litthauischen, Altarabischen, Gothischen, und Deutschen* (5 vols. Berl. 1833-'52, 2d ed. 1856); his books on the Celtic (Berl. 1839, 2d ed. 1858) and Malay languages (Berl. 1841), and others, give him the highest rank as a comparative linguist; indeed, only Dr. Edw. Röth, of Heidelberg, can be named with him. Cardinal Angelo Mai spoke

and understood many more languages; W. von Humboldt, Hammer, and Röth, and many others, knew and know fundamentally, perhaps, as many as he; but he, first of all, contrived to trace the origin of the different families of languages back to their common source, and to show, not only by the similarity of single words, as had been done in many cases long before him, but by their spirit and grammatical construction, how languages are related with each other, and how they originated. It is clear that history thus receives an entirely new light; while anthropology and ethnology gain either trustworthy confirmation, or, at least, new hints; and the origin of the different races, nations, religions, states, and institutions, is more and more cleared up. The languages most indebted to Bopp are the Sanscrit, Zend, Malay, Semitic, Slavonic, Celtic, and the ancient and modern Germanic tongues. His more recent productions are on the ancient Prussian language (1858), and on the Albanian language (1855).

BOPPARD, or **BOPPART** (anc. *Bandobrica* or *Bontobrica*), a walled town of Prussia, on the Rhine; pop. about 4,200. It owed its origin to a fort supposed to have been built by Drusus. Its streets are narrow and antiquated, and it contains 2 fine Gothic churches, a female seminary, and 2 hydropathic establishments, 1 of which occupies the former abbey of Marienberg. The town has some trade and manufactories of cotton, tobacco, and leather.

BORA, KATHARINA VON, the wife of Martin Luther, supposed to have descended from a family of rank, born in Löben, in the circle of Merseburg, Prussia, Jan. 29, 1499, died at Torgau, in Prussian Saxony, Dec. 20, 1552. In her youth she was placed in a Cistercian convent, near Grimma, in Saxony. Here she read some of the works of Luther, which inspired her and 8 other nuns with great enthusiasm. Through the instrumentality of Leonhard Koppe, a native of Torgau, Luther succeeded in securing the escape of Katharina and of her companions in the convent, on the night of April 4, 1523. They fled first to Torgau, then to Wittenberg. Luther exonerated Koppe from all responsibility in the matter, by taking it publicly upon himself, and by calling upon the young ladies to return to their parents. As this, however, was not feasible, he provided for them as best he could. Some of them found employment as teachers, others married. Katharina alone was left, and became an inmate in the house of the mayor of Wittenberg. Luther, struck with her amiable qualities, as well as with her talents, married her, June 18, 1525, although much her senior in years. The union was happy. Left a widow by his death, she had the friendship and aid of Christian III., king of Denmark, and John Frederic of Saxony. She lived successively at Magdeburg, Brunswick, Wittenberg, and Torgau, and left 8 sons and 2 daughters.

BORACIO ACID, a compound of the metal boron or borium and oxygen, in the proportion of 1 equivalent of the former to 8

of the latter; or in 100 parts, 81.48 of borium and 68.57 of oxygen. In its common form of a crystallized hydrate, 1 equivalent of boracic acid is united to 8 equivalents of water, and the compound consists of 56.45 of boracic acid and 43.55 of water. It is the only known compound of borium and oxygen. It was discovered in 1702, by Homberg, who called it sedative salt. The crystals are white, pearly, and scaly, unctuous to the touch, and exposed to a temperature of 212° F. lose half their water of crystallization, and at a higher temperature the whole. The mass fuses into a hard transparent glass, but will not sublime, except at a white heat. This is anhydrous boracic acid. Unless protected from the air it absorbs water, and loses its transparency. Its specific gravity is 1.8; that of the hydrate is 1.48. Boiling water dissolves $\frac{1}{2}$ of its weight of the crystals; cold water only about $\frac{1}{10}$. They are soluble in alcohol, and when this is ignited, the acid gives to the flame a beautiful green color. This is employed as a characteristic test of its presence. The acid properties of this substance at ordinary temperatures are very feeble. It scarcely reddens vegetable blues, and turmeric paper is rendered brown by it as by an alkali. It is expelled from its combinations almost as readily, by stronger acids, as carbonic acid is. But at high temperatures, as when exposed to a red heat in a crucible, boracic acid mixed with sulphate of soda expels the sulphuric acid, and combines with the soda; when cold, the process may be reversed. In boiling the aqueous solution, the acid is taken up by the steam; much more, however, is this the case with the alcoholic solution. It is to this property we owe the supplies of boracic acid, which are furnished from the interior of the earth by jets of steam that issue through fissures, and come up more or less laden with this material, and other substances, as sulphur, sal-ammoniac, clay, and gypsum. The acid is deposited in the soil in the form of solid efflorescences, or is collected in pools of water, through which the jets are made to pass. In South America it is collected upon the surface of the ground. At an island of the Lipari group, called Vulcano, 12 miles north of Sicily, it rises in vapor at the bottom of the crater of an extinct volcano, 700 feet below its summit. The vapor condenses here upon the bottom and sides, like frost after a heavy dew; but it goes on accumulating, till it resembles more a bed of clean snow; beneath it is found a layer of red-hot sal-ammoniac, through which come up sulphurous vapors. The boracic acid is gathered up as it collects, and with the sulphur and sal-ammoniac is a source of no little profit to the proprietors of the volcano. It is also found at Sasso, in Italy, and has hence been called Sassolin. But the great supplies of it are obtained from the volcanic districts of Tuscany. Here, over an area of some 30 miles of wild mountain land, issue through beds of calcareous rocks, black marl, and sand, numerous jets of steam, which rise in white clouds

among the hills, and spread around offensive sulphurous smells and vapors, that drench those passing by the spot. The ground itself is hot and undermined. It shakes beneath the feet, and is sometimes so treacherous as to let man or beast, that walks upon it, fall through into its heated recesses. Its surface is covered with incrustations of sulphur and saline substances. The waters beneath are heard boiling with strange noises, and are seen to break out upon the surface. Of old it was regarded as the entrance to hell. The peasants pass by in terror, counting their beads, and imploring the protection of the Virgin. The name Monte Cerboli—*mons Cerberi*—is still retained by a neighboring volcano, and the principal lagoon or pool from which the acid is obtained. It is not many years since the great value of these natural exhalations, or *soffioni*, as they are called, was discovered; but now, in the possession of Count Larderel, they are by the application of skill and ingenuity made very profitable. Wherever up the slopes of the hills the ground is observed to be hotter than usual, and sulphurous vapors are seen to arise from it, and the surface is felt to tremble, a pit is dug, from which soon issues a column of steam. A temporary wooden chimney is put up for this to pass through, so that the workmen may continue the excavation, and construct a basin with stone wall lining, to contain the water intended to receive and collect the boracic acid brought up by the steam. The water is introduced from some supply at the surface, and the chimney is removed. The heat soon causes the water to reach nearly the boiling point. It penetrates into the fissure, and is rejected by the steam, bringing up with it a portion of boracic acid. As it is found that the quantity which the water is capable of absorbing is very small, fresh supplies are introduced every day; and the pits are so arranged down the slope of the hill that the water entering at the top passes from an upper basin into a lower one, and so on, till at the foot it is received into large evaporating pans. The basins or "lagoons" are of rough shapes, rudely constructed, from 5 to 8 feet deep, and from 13 to 60 feet in diameter; they continue to receive the vapors for years; but the jets are liable at any time to cease and break out in a new place. The pans are very numerous, and present a great evaporating surface. They are heated by the vapors of some of the *soffioni*, which are conveyed under them in flues. After the liquor has passed through a series of the pans and been greatly concentrated, it is baled out and drained through baskets, and the precipitated salt is taken to the drying rooms. These are of brick, and warmed in the same manner as the pans are heated. Thus the operations are carried on with no expense of fuel, and boracic acid is obtained to the amount of 3,000,000 Tuscan pounds or more per annum. To produce this amount, as was done in 1846, there were 400 evaporating pans in operation, of 10 feet square each, with several others of 800

feet in length, divided into compartments, through which the water flowed slowly from one to another, being thus much concentrated by evaporation. These works appear to have been established about the year 1818. For the first 10 years they produced only 1,500,000 pounds, and in the next 10 years, 14,000,000 pounds. From that time their yield has slowly increased from 2,152,000 pounds in 1839 to about 3,000,000 in 1846. The product is of late years more impure than formerly, the foreign matters having increased from 8 per cent. to 25 per cent.; which appears to have excited some apprehension lest the supply may give out. An analysis made by Wittstein of the crude acid is interesting, as showing the very great variety of the associated substances. It is as follows:

Boracic acid crystallized	76.494
Water	6.537
Sulphuric acid	1.322
Silicic acid	1.200
Sulphate of ammonia	8.508
Sulphate of manganese	traces
Sulphate of magnesia	2.639
Sulphate of lime	1.018
Sulphate of soda	0.917
Sulphate of potassa	0.369
Besquisulphate of iron	0.345
Besquisulphate of alumina	0.390
Chloride of ammonium	0.298
Organic substances	traces

Our knowledge of the Tuscan locality, and the process as there conducted, is derived from the treatise of Payen, who describes it in detail. Sir John Bowring also has furnished some interesting data concerning it. Boracic acid is of value principally for the preparation from it of borax. It is used in manufacturing a paste for artificial gems, and also in making enamel. It is not used in medicine. Its price in Liverpool is about £38 per ton.

BORACITE, the mineral substance borate of magnesia, consisting of boracic acid 62.8 and magnesia 37.2 per cent. It is found only in lower Saxony and Holstein.

BORAX, **BIBORATE OF SODA** (Arabic *baurak*, the *nitrum* of the Greeks and Romans), is first mentioned by the alchemist Geber, in the 10th century; and its chemical nature was first discovered by Geoffroy in 1732. It is largely prepared from the natural product, boracic acid; and is itself found native in various parts of the world. It was known to the ancients as occurring in concrete lumps on the borders of several lakes in Thibet and Persia, and the waters of these lakes also afford it by evaporation. The lumps dug out of the ground are sold under the name of tincal or crude borax. It is abundant in Peru and in Ecuador, in the great sandy desert, which extends back from the Pacific coast to the Andes. Iquique is the port from which it is shipped. The borax found here is much mixed with borate of lime. All the crude borax requires refining to prepare it for most of the uses to which it is adapted. But borax prepared from boracic acid almost wholly supplies the demands of commerce. Pure anhydrous borax consists of 1 equivalent of soda and 8 of boracic acid—in 100 parts, 80.69 of soda and

69.31 of boracic acid. The crystallized borax contains different proportions of water, according to the form of the crystal. The common hexagonal variety consists of 10 equivalents of water, 1 of soda, and 1 of boracic acid; or per cent. 47.13 of water, 16.23 of soda, and 86.64 of acid. But when it crystallizes in octohedrons it contains only 5 equivalents of water. Borax is a white salt of sweet taste, soluble in twice its weight of boiling water. It melts by heat into a porous mass, which at a temperature increased to redness runs together into a transparent glass, called glass of borax, the specific gravity of which is 2.36. Exposed to the air, borax slowly attracts moisture, and its surface becomes coated with a white powder. It has the reaction of an alkali upon turmeric paper.—The refining of crude borax has been conducted in the seaport towns of the Mediterranean from remote times, and particularly at Venice. The name Venetian borax has thus been synonymous with the refined article. Various processes have been adopted for this purpose. Artificial borax is prepared from boracic acid by boiling this with carbonate of soda; the carbonic acid is expelled by the boracic acid, and borax crystallizes on cooling. The operation, however, must be conducted on a large scale and very slowly, in order to obtain large crystals. When the article was first introduced, in order to meet the prejudice in favor of the old quality, the crystals of which were worn and rubbed by long transport, it was found necessary to give the same appearance by turning them in a cask which revolved upon an axis. Borax is adulterated with common salt, alum, and phosphate of soda; with alum to such an extent that it may be detected by the taste, and when in solution and ammonia is added, the whole may be converted into a thick jelly by precipitation of the alumina. Litmus paper also detects it by the acid reaction of alum, in turning the blue color to red. Phosphate of soda has been found in English borax to the extent of 20 per cent. The uses of borax are as a flux for producing fusible silicates in assaying. In brazing and welding it forms a thin fusible protection to the bright metal surface, preventing oxidation and dissolving any oxide that may have formed. In the use of the blowpipe it is a very useful flux, from its property of dissolving the metallic oxides and forming colored glasses with them, by which their presence is detected. In medicine it is employed for many diseases connected with the bladder and the uterus, and also as a wash for cutaneous eruptions, canker in the mouth, and ringworm. It has the property of making cream of tartar, when boiled together with it, very soluble in water, and this soluble cream of tartar is often found a convenient preparation when large doses of this medicine are required. The manufacture of borax in England is confined to one firm in Liverpool. This firm produces about 2,000 tons per annum, worth £48 per ton.

BORDA, **JEAN CHARLES**, a French mathema-

tician, born at Dax, department of Landes, May 4, 1788, died in Paris, Feb. 20, 1799. Early appointed a teacher of mathematics in the light cavalry, and afterward an engineer, and finally a captain in the navy, he was naturally led to consider the practical questions of gunnery, navigation, and hydraulics. Chosen a member of the academy in 1756, he furnished to it several valuable contributions on these subjects. He was employed by the government in 1771 on chronometric expeditions, to ascertain the value of chronometers in determining longitudes. He was engaged in the revision of weights and measures in France, and calculated logarithmic tables for a centesimal division of the quadrant, sacrificing much of his private property in the expensive work of perfecting them. His name is in modern days connected with the reflecting circle, or repeating circle, a valuable astronomical instrument for measuring angles with great accuracy, invented by him.

BORDE, ANDREW, an English physician, born at Pevensey, Sussex, about 1500, died in the Fleet prison, London, April, 1549. He wrote several works of a humorous character; and is said to have given rise to the phrase, "Merry Andrew," from his practice of making droll speeches at fairs and public gatherings, to attract the people.

BORDEAUX (anc. *Burdigala*), a large commercial city and seaport of France, capital of the department of Gironde, on the left bank of the river Garonne, 55 miles from its mouth, 307 miles S. W. of Paris. Several centuries before Christ, it was a commercial emporium, and the chief town of the *Bituriges Visici*, a Celtic nation of southern Gaul. In the 3d century, Hadrian made it the metropolis of *Aquitania secunda*. Many monuments were erected by the Romans, among the number the temples of Tutela and of Diana, the fountain of Divona, and the amphitheatre. On the fall of the Roman empire, Burdigala was held for less than a century by the Visigoths, who were driven from it in 509 by Clovis. For a few years during the 8th century it was possessed by the Saracens from Spain, but after the battle of Poitiers they were expelled, and Bordeaux, under Charlemagne, was governed by counts of its own. On the final dissolution of the Carolingian empire, Bordeaux became the capital of the duchy of Aquitaine, but was for a time united to France by the marriage of Eleanor of Aquitaine with Louis VII.; this princess, however, being divorced, brought all her rich inheritance to Henry Plantagenet, afterward king of England. From that period until the middle of the 15th century, Bordeaux remained in the possession of the English, and in the 14th century the Black Prince made Bordeaux the seat of his court. The city was the last to submit to Charles VII. of France, in 1453. This prince added to its already strong fortifications the castle of Ha and the château Trompette, for centuries the strongholds of Bordeaux. Material improvements began under the reign of

Henry IV.; they continued during that of Louis XIV., when several Roman structures were taken down to make room for new buildings, and after 1748, they were conducted on a regular plan. A new city rose at the north of the old one, with fine avenues, promenades, and squares, adorned by handsome edifices. In Bordeaux and its vicinity were born Ausonius, Montaigne, Montesquieu, the Black Prince, Richard II. of England, and Charles Vernet. During the first revolution, Bordeaux was the headquarters of the Girondists, and suffered much during the reign of terror. Under Napoleon, the town was injured by the continental blockade, and, thus alienated from the imperial rule, became noted for its loyalty to Louis XVIII., who manifested his gratitude by conferring the title of duke of Bordeaux upon the posthumous son of the duke de Berry.—Beside the palace or amphitheatre of Gallienus, very few remains of the Roman monuments are to be seen. Those of the middle ages have been better preserved; among these are the cathedral, an irregular though imposing Gothic edifice, undertaken in the 11th century, and completed in the 15th; the church of St. Michel, built toward the 12th century; the church of St. Croix, built before the middle of the 7th century, and restored by Charlemagne; the imperial college and other ancient buildings. The modern edifices are inferior neither in number nor in beauty: the imperial palace, formerly the residence of the archbishop; the Bourse, and the *grand théâtre*, built in the reign of Louis XVI., at an expense of about \$800,000, and presenting, without exception, the handsomest exterior in Europe. The *théâtre des carités*, which was also one of the most beautiful in France, was destroyed by fire on the night of Dec. 1, 1855. The famous bridge which maintains the communication between the city and the suburb La Bastide, on the right bank of the Garonne, was commenced in 1810 and completed in 1821, at a cost of \$1,800,000. The view presented by the city from the opposite bank is unrivalled; superb quays, lined with handsome buildings, skirt the Garonne, which forms here a large half circle, about 8 miles on the outer side, and is more than 700 yards wide. The port is capable of accommodating 1,200 ships, and such as do not exceed 500 or 600 tons may enter it at all times of the tide. Some of the accommodations for commercial or manufacturing purposes are on a gigantic scale, such as the dock for colonial produce; the snuff manufactory near Fort du Ha, the warehouse of which is capable of holding more than 80,000 cwt. of tobacco; and some of the cellars in the *quartier des Chartrons*, immense caves, where 1,000 tuns of wine or millions of bottles can be laid up at once. Manufactures are extensively carried on. Beside ship yards, there are numerous brandy distilleries, sugar refineries, vinegar, glass bottle, shot and cordage factories, manufactures of cotton, woollen, kid gloves, corks, musical instru-

ments, &c., &c. There is trade in grain, cattle, and timber, but the chief exports consist of the red wines produced in the vicinity, of which 50,000 to 60,000 tons are yearly sent to every country, especially to England, Russia, and the United States. Brandies, which come mostly from the region north of the city, form the next branch of exports. About 400 vessels, of the burden of 70,000 tons, belong to the port. In 1853, 1,431 vessels, tonnage 190,000, of which 1,080, tonnage 116,141, were French, entered the port, and 946 vessels, tonnage 163,592, of which 546 French, tonnage 87,880, left it. In the coasting trade of the same year, the arrivals were 8,881 vessels with 428,277 tons, and the clearances 7,307 vessels with 406,419 tons. The value of goods placed in bond in 1853, was about \$10,000,000. In the first 3 months of 1855 the arrivals of vessels were 266 (of which 196 were French), and the clearances 160 (of which 120 were French). A newly constructed railroad facilitates intercourse with Paris and the intervening towns in the valley of the Loire. Beside a joint-stock bank, with a capital of \$600,000, which has been long in existence, the bank of France has established here within the last 10 years a branch, which transacts a large amount of business. The custom-house duties bring in yearly between \$2,000,000 and \$2,500,000. The municipal receipts are over \$600,000, and this income enables the city to maintain establishments of instruction and charity. Among the latter, the new hospital deserves special notice. The museum contains the public library with 110,000 volumes, cabinet of natural history and antiquities, a picture gallery with good paintings of the French, Italian, and Flemish schools, classes in design and painting, and an observatory. There is also a botanic garden, with courses of lectures upon natural philosophy, an academic faculty and the imperial college dependent on the university of France, an imperial academy of arts, sciences, and belles-lettres, and several other learned societies and scientific establishments. Twenty-five journals and periodicals are published in Bordeaux, of which 7 are political. Bordeaux is the seat of an archbishopric and an imperial court, has tribunals of primary jurisdiction and of commerce, and 47 Catholic churches, 1 Protestant church, and 1 synagogue. In point of wealth, instruction, and refinement, it holds, next to Paris, the 1st rank among the cities of France, while in point of population it is the 4th, containing, in 1856, 140,601 inhabitants.

BORDEAUX, HENRI CHARLES FERDINAND MARIA DIEUDONNÉ, duke of. See CHAMBORD.

BORDEAUX WINES, a general name applied to the wines produced in the French department of Gironde. The average annual produce is 48,400,000 gallons, of which 30,800,000 are exported, 8,800,000 taken for home consumption, and 8,800,000 employed in the manufacture of cognac. There are 6 classes of Bordeaux wines, Médoc, Graves, Palus,

Coast, Terres Fortes, and Entre-deux-Mers. Médoc is red, and comes from the district of the same name; Graves is white, and is produced south of Bordeaux; Palus is red and white, from the Garonne and Dordogne, the Montferrat being the best of the kind; the coast wines are also from the Garonne and the Dordogne, between Langon and Blaye; the Entre-deux-Mers are produced in the north-east of Médoc. In respect to quality the wines are divided into 5 classes. The 1st class contains 4 *crus*, which are 25 per cent. higher in value than other wines of the same district. These are, Lafite, Latour, Château-Margaux, and Haut-Brion. The 2d class comprises the wines of Rozan, Gorce, Berille, Larose, Brane-Mouton, Pichon-Longueville, and Calon. The other classes are composed of inferior qualities. The 2 principal classes of white Bordeaux wines are those of Graves and those of the left bank of the Garonne. The best wines among the latter are the Santernes, Barsac, Preignac, and Langon. The best Bordeaux wines are popularly known in America and in England as claret. They are noted for delicate flavor, and a perfume which seems to combine the violet and the raspberry; rich in color, grateful to the sense, and wholesome in their effects.

BORDEN, SIMON, an American civil engineer and scientific mechanic, born at Free-town, now Fall River, Mass., Jan. 29, 1793, died at the same place, Oct. 28, 1856. His early years were spent at Tiverton, R. I., where he acquired such imperfect rudiments of education as the district schools afforded. He developed great perceptive power and mechanical ability. Mathematics and geometry, as applied to mechanical combinations, were his especial studies, and he taught himself with the aid of such books as accident threw in his way. Without serving any apprenticeship he made himself a thorough workman in wood and metal, and became one of the ablest practical mechanics of his day. Early in life he practised surveying with success, and made his own surveying compass, which is still extant, and an excellent instrument. With the first fruits of his labors he purchased Rees's Cyclopædia, which opened to him a mine of information, and contributed greatly to his future success. In 1828 he took charge of a machine shop in Fall River, Mass., and in 1830 devised and constructed for the state of Massachusetts, an apparatus for measuring the base line of the trigonometrical survey of that state. The apparatus was 50 feet long, was enclosed in a tube, and was of an invariable length in all temperatures. Four compound microscopes accompanied it, and both tube and microscopes were mounted upon trestles, having motion in every direction. At that time it was the most accurate and convenient instrument of the kind extant, and it is now only surpassed by that of the U. S. coast survey. Mr. Borden assisted in the measure of the base and in the subsequent triangulation. In 1834 he took charge of the

work, and completed it in 1841. In its progress his genius and resources were tried to the utmost. With limited means and imperfect instruments he proved his ability by "doing good work with poor tools." An account of this survey and its results may be found in the "American Philosophical Transactions," vol. ix. p. 84. Its precision has since been satisfactorily proved by the coast survey. Mr. Borden was next employed as surveyor in the case "Rhode Island vs. Massachusetts," argued in the U. S. supreme court in 1844. After its decision he traced and marked the boundary lines between those states. He also constructed several railroads, and published, in 1851, "Formulas for constructing Railroads," in one octavo volume. In 1851 he accomplished a difficult feat in engineering, by suspending a telegraph wire, over a mile long, upon masts 220 feet high, across the Hudson, from the Palisades to Fort Washington. But his reputation as a scientific man rests chiefly upon his successful conduct of the first geodetic survey ever completed in this country. At his death he was a member of the American philosophical society, of the American academy of arts and sciences, and other learned bodies. In his private character he was a model of integrity and honor.

BORDENTOWN, a village, pop. 3,000, in Burlington co., N. J., on the Camden and Amboy railroad, 80 miles from Philadelphia, 57 from New York, and 6 from Trenton. It lies pleasantly on an elevated plain on the left bank of the Delaware river, and contains several public and private schools. It is the terminus of the Delaware and Raritan canal, is connected by railroad with Trenton, and is a favorite place for excursions by steamboat from Philadelphia. The mansion built and long inhabited by Joseph Bonaparte, is in the neighborhood.

BORDLEY, JOHN BEALE, an American agriculturist, born in 1728, died at Philadelphia, Jan. 25, 1804. Though of the legal profession, his habitual employment was husbandry, and he cultivated an estate on Wye island in Chesapeake bay. He published many essays and short treatises on agricultural topics.

BORDONE, PARIÉ, a painter of the Venetian school, born at Treviso in 1500, died in Venice in 1570. He studied under Titian at Venice, and subsequently devoting himself to the study of Giorgione's works, originated a style of his own, full of fire and grace, and distinguished by all the force of coloring then peculiar to the Venetian school. One of his best preserved and most successful pictures is the "Old Gondolier presenting a Ring to the Doge," which Vasari styles the artist's masterpiece.

BORE, the rapid rushing of the tide inland against the current of a river. This phenomenon takes place when a narrow river falls into a gradually widening estuary which is subject to high tides. At spring tides the great volume of water which enters the wide mouth of the estuary is compressed as it advances till it is

several feet higher than the mouth of the river, up which it therefore rushes like a torrent. In England the bore is observed in the Severn and Trent rivers and in Solway frith. There is a remarkable bore in the Hoogly branch of the Ganges, where the current goes 70 miles in 4 hours; also at the mouth of the Bramapootra, where no boat ventures to navigate at spring tide, and at the mouth of the Indus. The rise of the tide in the bay of Fundy resembles a bore, and this phenomenon is observed in some of the smaller rivers on the coast of Brazil, as well as in the Amazon.

BOREAS (the north wind), in mythology, a son of Astræus and Eos, a brother of Hesperus, Zephyrus, and Notus, dwelt in a cave of Mount Hæmus, in Thrace, carried off Orithyia, daughter of Erechtheus, by whom he begot Zetes, Calais, and Cleopatra, who are called Boreads. In the Persian war Boreas destroyed the ships of the invaders, and hence was worshipped at Athens, where a festival, Boreasmoi, was instituted in his honor. He was represented with wings, which, as well as his hair and beard, were full of flakes of snow; instead of feet he had the tails of serpents, and with the train of his garment he stirred up clouds of dust.

BORECOLE, a variety of cabbage known as Brussels sprouts, and celebrated for tenderness and delicate flavor. Wild cabbage, or *brassica oleracea*, to which species borecole belongs, is met with in abundance in many parts of Europe. It is very common in the southern part of Turkey, especially about Mount Athos. It is also found in Great Britain, on the coast of Kent, near Dover, on the Yorkshire coasts, in Cornwall and Wales, and on the isle of Wight. In other places it forms a broad-leaved glaucous plant, with a somewhat woody stem, having but little likeness to its cultivated progeny. In comparing the different varieties of wild cabbage with the corresponding varieties of garden produce, it is difficult to conceive by what successive steps of culture and domestication the numerous changes and improvements have been effected, which gave birth to the present races of cabbages, savoy, borecoles, broccolis, and cauliflowers, so different in aspect and in flavor from their wild progenitors.

BOREHAM, a parish in Essex, England, the site of Newhall, a mansion built in the reign of Henry VII., and successively occupied as a residence by the princess Mary, by Villiers, duke of Buckingham, by Cromwell, and by the duke of Albemarle. Newhall is now a nunnery.

BORGHESE, the name of a patrician family of Sienna, Italy, which has been more or less distinguished since the middle of the 15th century. A jurisconsult, of the name of Marco Antonio Borghese, who was employed by the papal court in the early part of the 16th century, appears to have laid the foundation of its fortunes at Rome. His 8d son, Camillo, became Pope Paul V. in 1605, and he lavished the honors and riches which his place enabled him to command on his relatives. For a son of his elder

brother, named Marco Antonio Borghese, he procured the principedom of Sulmona and a grandeeship in Spain. His brother Francesco he made the leader of the troops sent against Venice in 1607, to maintain the papal cause against the opposition of that republic. Scipione Caffarelli, a nephew, he created cardinal. Paolo, the son of Marco Antonio, married Olympia Aldobrandini, the only child of the prince of Rossano, and grand-niece of Clement VIII., and thus introduced the wealth of the Aldobrandini into the Borghese family. The son of Paolo, named Giovanni Battista, was the ambassador of Philip V. to the court of Rome, where he died in 1717. His son, Marco Antonio, was viceroy of Naples in 1731, and another of the same name, descended from him, became a noted collector of works of art, with which he adorned his sumptuous villa on the Pincian hill.—CAMILLO FILIPPO LUDOVICO, a son of the art collector, born in Rome, July 19, 1775, died at Florence, April 10, 1832. During the invasion of Italy by the French he joined the enemy, showing a singular devotion to the French, and particularly to Bonaparte; and was afterward (1803) rewarded with the hand of Marie Pauline, the sister of Napoleon, and widow of Gen. Leclerc. In 1804 he became a French prince, and on the breaking out of the Austrian war, the next year, assumed the command of a squadron of the imperial guard. At the close of it his wife received the duchy of Guastalla, and he took the title of the duke of Guastalla. He served in the campaign of 1806 against the Russians and Prussians, after which he was appointed by the emperor governor-general of the provinces beyond the Alps, which included also the former states of Piedmont and Genoa. Fixing his court at Turin, he conducted his government with moderation and judgment. At the request of Napoleon he sold to the French nation, for the sum of 8,000,000 francs, over 800 of the beautiful works of art which ornamented the palace of his ancestors at Rome. Among them were many masterpieces, which are now the delight of the visitors to the Parisian galleries. After the abdication of Bonaparte, however, he broke up all connection with the family, and separated from his wife. He then fixed his residence in Florence, where he lived in great splendor till his death. Beside the famous palace on the Pincian hill, his family were left large estates in different parts of Tuscany, Naples, and the papal territories. The duchesse d'Abbrantès says he "was exceedingly handsome, with a plentiful lack of brains."—MARIE PAULINE, princess, originally Bonaparte, born at Ajaccio, Oct. 20, 1780, or April 22, 1781, died in Florence, June 9, 1825. In 1793, when the English were in the occupation of Corsica, she was sent to Marseilles, where she afterward came near marrying Fréron, a member of the convention, but another lady laid claim to his hand. She was then intended for Gen. Duphot, who was afterward murdered at Rome. Junot was in love

with her, but Napoleon prevented the match, inasmuch as he was not rich. Another general, Leclerc, for whom Napoleon had a high esteem, became her husband in 1797. Together with the rest of the family she removed to Paris, when the star of the first consul began to shine. At that time she was remarkable for her beauty, as she was, indeed, during her whole life. The duchesse d'Abbrantès speaks of "the extraordinary perfection of her beauty," and of the "exquisitely beautiful Paulette," comparing her to Venus or Galatea. The same authority adds that she was no less whimsical, capricious, and vain. When Leclerc was sent to St. Domingo as captain-general, she followed him greatly against her will and by order of her brother, embarking at Brest, Dec. 1801, and exciting the admiration of the ship-poets so much that they called her the *Venus marina*. During the troubles on the island she displayed unusual intrepidity; and on one occasion, as the insurgent negroes attacked her residence at Cap François, she could only be induced to leave it, in order to seek refuge on ship-board, by force. Her husband dying one year after their arrival, she returned to Europe, where she was again married in 1803 to the prince Camillo Borghese. Their domestic life, however, was not happy, and, after some years, they separated. Pauline was, perhaps, the most accomplished of Napoleon's sisters; she was fond of poetry and the arts, and possessed no little theatrical ability. While she occupied a part of the villa Borghese at Rome, her house was the resort of the most brilliant society of the city. Napoleon was attached to her, although it is said that she manifested a less slavish submission to the imperial will than any of her family. Her independence in regard to himself he often overlooked, but when she put some slight upon the empress, to whom she was inimical, he compelled her to leave the court. She was still in exile when he abdicated in 1814, but she interested herself much in his fate, and was about to join him in St. Helena, when the news of his decease arrived. A little while before her own death, she was reconciled to her husband, and lived with him at Florence.

BORGHESI, BARTOLOMMEO, count, a learned numismatist, born July 11, 1781, at Savignano, in the Papal States. His attention has been devoted to elucidating, through the study of inscriptions, several obscure points in Roman history; and the papers he has published, at various periods, in some of the Italian reviews, have secured for him a great reputation among the learned. Since 1821 he has been a resident of the little republic of San Marino. He has now completed, after more than 30 years' labor, a full chronological list of the Roman consuls, embracing all the modern discoveries on the subject, with disquisitions on the most important questions connected with Roman antiquities.

BORGHI-MAMO, ADELAIDE, an Italian prima donna, born in Bologna, Aug. 9, 1830,

made her debut there Dec. 1846, appeared in 1851 at the San Carlo in Naples, and has been since 1853 engaged at Vienna.

BORGHI, GIOVANNI, the originator of ragged schools, born in Rome about 1786, died about 1802. He was a mason by trade, and entirely uneducated, but after his daily toil was completed, he was in the habit of attending the sick in the hospital of Santo Spirito, spending entire nights in his labor of love, and frequently falling asleep at his work during the day. In his daily walks, he had noticed troops of vagrant children in the streets, fast ripening into vice and crime. He took them home to his humble lodgings, and having clad them, with the aid of alms which he collected, he apprenticed them to useful trades. This noble work was observed and admired by others, who freely lent their aid, and when the number of children became too great for his close quarters, more suitable and ample accommodations were provided by 2 good ecclesiastics, who paid the rent, and aided him by their influence and counsel, and in due time a society was formed, contributing monthly toward its support. Thus aided, its organization was further developed in 1784. Although Giovanni was himself ignorant, he perceived the advantages of instruction, and caused the children to be taught reading, writing, and arithmetic, by one Francesco Cervetti, who afterward left him and founded another refuge for orphans called the "Assumption of the Virgin," which was consolidated with that of Giovanni in 1812. Pius VI. highly approved of the good work, and having purchased for the institution the Palazzo Ruggi, became its principal protector. Subsequently, it was removed to different convents, and finally to the church of St. Anne of the carpenters. The children rose at an early hour, attended mass, and after receiving each a loaf of bread, went to their respective workshops, which Giovanni frequently visited himself, to learn of their progress and behavior. At the Ave Maria, he stood at the entrance door with a bag in his hand, into which the boys dropped their day's earnings. The school lessons were next in order, and finally the frugal supper. The discipline was strict, including corporal punishment. Yet Giovanni was by no means inconsiderate, frequently accompanying the pupils to the country, and joining in their sports. He allowed the boys to select the trade to which they had the greatest inclination, for which they evinced the greatest aptitude, and that best suited to their capacity and strength.

BORGIA, CESARE, an Italian prelate and soldier, born about 1457, died March 12, 1507. He is generally believed to have been the son of Rodrigo Lenzuolo, afterward Pope Alexander VI., and Rosa Vanozza (Giulia Farnese). Having first officiated as bishop of Pampeluna, he was promoted by his father, in 1498, to the dignity of cardinal, and became known as the cardinal Valentino, from the diocese of Valencia, of which he was made archbishop. He at

once began a war of extermination against the feudal barons and small princes in the Papal States and its vicinity, having persuaded his father to take the lead in this movement. Thus the Borgias dispossessed most of the feudatories, seizing their strongholds, castles, and estates. About that time, Zizim, brother of Bajazet II., sought in Rome a refuge from the murderous schemes of his brother, who offered 800,000 ducats to the pope for the extradition of the fugitive, or for his head. Charles VIII., king of France, who was then with his army in Italy, where he exercised a wide influence, moved by the fate of Zizim, imperiously demanded from Alexander VI. that the Turkish prince should be sent to his camp. Cesare advised his father to yield to the demand, but previously to administer to Zizim a slow poison, and himself accompanied the victim as a hostage; but when the drug began to operate, he escaped from the French camp. He likewise poisoned Giovanni Battista Ferrata, the richest and most influential dignitary in the papal court, and seized the treasures he had accumulated. Soon afterward he was suspected of procuring the murder of his own brother, Giovanni Borgia, duke of Gandia, who was found in the Tiber pierced with 9 stiletto strokes, by unknown hands. The pope released him from his clerical vows, and endeavored to make him marry Charlotte, daughter of Frederic of Aragon, king of Naples. This scheme, however, was unsuccessful, but a cardinal who participated in the intrigue was poisoned and his fortune seized by Borgia. Louis XII., king of France, demanding from the pope a divorce from his first wife, the demand was granted on the condition that he should create Cesare a duke, and take him into the French service. Borgia became duke of Valentinois, received a considerable military command and emoluments in the French army, and in 1499 married Charlotte, sister of Jean d'Albret, king of Navarre. He commanded in the campaigns of Louis XII. in Italy, and by his wonted means seized for his own account Forli, Cesena, Imola, Rimini, Piombino, the island of Elba, Faenza, Camerino, and murdered their sovereigns. He finally wished to destroy all the petty sovereigns, and to seize Romagna, Umbria, Tuscany, and, uniting all these states, to make himself the king of Italy. As this would have satisfied the longings of many among the Guelphic patriots, forever precluding, as they believed, all foreign intervention in the affairs of the peninsula, Borgia, notwithstanding his crimes, found eulogists among them. Macchiavelli took him as his standard in his celebrated work *Il Principe*, and has been accused by many writers of being a decided partisan of Cesare. But Louis XII. arrested these ambitious machinations, and many whom Cesare had already deprived of their possessions, as for example the duke of Urbino, recovered them. His most bloody military action was the storm and slaughter in Sinigaglia, at the head of his Swiss merce-

naries, described by Macchiavelli. He still continued to poison and otherwise murder feudal barons, cardinals, and other wealthy persons. Finally, as most historians allege, though Roscoe does not admit the statement, in conjunction with his father, he concocted the plan of poisoning 4 of the wealthiest cardinals at an evening party in the villa Corneto. But by mistake the poison, which was mixed in wine, was administered to Alexander VI. and to Cesare. The pope died about a week after. Cesare was saved by being generally temperate, having taken but little of the drugged wine, with water. He seized upon the papal treasures in the Vatican, and with about 12,000 mercenaries still kept Rome, although those whom he had despoiled in central Italy revolted and recovered their lost property. Finally his troops abandoned him, and the pope, Julius II., arrested and expelled him from the Papal States. He took refuge with Gonzalez de Cordova, the commander of Naples, who sent him to Spain, where he was imprisoned by Ferdinand of Aragon. After 3 years he escaped and found an asylum, in 1506, at the court of Jean d'Albret, his brother-in-law. Finally he was slain, in 1507, before the castle of Viana, which he was besieging, in the war of the king of Navarre with Ferdinand the Catholic. He had been educated with the greatest care, and was considered one of the most cultivated minds of his epoch. His eloquence was so persuasive and seductive, that few could resist being carried away, even against their own interests. He was temperate in the use of liquors and the table, and patronized science and letters, which accounts for his having found some defenders.

BORGIA, LUCREZIA, daughter of Alexander VI., and sister of Cesare, lived in the latter half of the 15th century. She had numberless lovers, and has been accused of incest with her father and her 2 brothers, though modern critics have called this in question. She was affianced in her youth to an Aragonese nobleman; but her father becoming pope gave her in marriage, in 1498, to Giovanni Sforza, lord of Pesaro. This match was dissolved in 1497. She afterward married Alfonso, duke of Biseglia, whose assassination was ordered 2 years afterward by Cesare, her brother. In 1501, she married Alfonso d'Este, a son of Ercole, duke of Ferrara. She survived her whole family, and attracted to her court poets and men of letters, among others Pietro Bembo, who celebrated her genius. Victor Hugo has made her the subject of a play, which affords the basis for the well-known opera of Donizetti. Her complexion was fair, and her hair of a kind of silver-blond, as rare as it was beautiful.

BORGIA, STEFANO, an Italian cardinal and director of the Roman propaganda, born at Velletri, Dec. 8, 1731, died at Lyons, Nov. 23, 1804. He was one of the most generous patrons of science in the 18th century. Having been made a member of the Etruscan academy

of Cortona, in 1750, he founded the celebrated museum of antiquities at Velletri, which became the richest of all such collections. Subsequently officiating as governor of the duchy of Benevento, he distinguished himself by his able administration, and preserved that province from the famine which ravaged the kingdom of Naples in 1764. In 1770 he became secretary of the propaganda, and during 18 years that he occupied that office he had to do with missionaries scattered all over the globe, and was enabled greatly to enrich his collection of rare manuscripts and antiquities. Pius VI. named him a cardinal in 1789, and put under his care the institution of foundlings, and Borgia's name thus became connected with various benevolent establishments. In 1797, when the revolutionary movement reached Rome, Pius VI. made him dictator of the city. When the French troops arrived before the walls, Feb. 15, 1798, the republican party rose, and arrested and expelled him from the Roman states. He retired to Venice, then to Pisa, where, as was his wont, he formed a small society of scientific men. He returned to Rome with Pius VII., and devoted his time to various administrative ameliorations. He died on a journey to Paris as companion of the pope. During his life he was the friend of men of science and letters, and left a highly esteemed name. He also had a respectable reputation as a writer and archaeologist.

BORGIA, ST. FRANCIS, duke of Gandia, viceroy of Catalonia, and afterward 8d general of the society of Jesus, born at Janda, Spain, in 1510, died in Rome in Oct. 1572. He was eminent as a soldier and statesman, and enjoyed the confidence and friendship of Charles V. He married very young a noble Portuguese lady, Eleonora de Castro, by whom he had a large family. He was always very strict in his morality, and exact in his religious duties; but the sight of the disfigured corpse of his late sovereign, the beautiful Isabella of Portugal, made such a profound impression on him, that he ever after lived at court like the most austere monk in his cloister. After the death of his wife, he entered the society of Jesus, and was ordained priest in the 40th year of his age. At the death of Laynez, in 1565, he was elected general of the society, and remained in office until his death. Several bishoprics, and the dignity of cardinal, were repeatedly pressed upon him, but refused. He was canonized by Clement X. in 1671.

BORGNE, LAKE, situated in the south-eastern part of the state of Louisiana. Though this body of water is termed a lake, it is strictly the termination of that large arm of the Mexican gulf known as Pascagoula sound, being united to that by a pass or strait crossed by a line of small islands, and faced on the east by Grand island. Lake Borgne is also connected with Lake Pontchartrain by the Rigolet pass. It is about the average depth of Lake Pontchartrain, and approaches within 15 miles of New Or-

leans. Its greatest extent is in a north-east and south-west direction, in which its length is about 80 miles. Lake Borgne forms a part of the western boundary of the Mississippi delta.

BORGOGNONE, **JACOPO CORRADI**, a painter, born in Burgundy, in 1621, died in Rome, Nov. 14, 1676. He studied his art at Bologna, a part of the time under the instruction of Guido, whose style of coloring he imitated. His great excellence lay in representing battle scenes. He resided for many years at Florence, where he acquired a fortune by his pencil, and finally, in 1655, became a Jesuit. This did not interfere, however, with his devotion to his art, which he continued to practise until his death.

BORGOO, a large kingdom in the interior of Africa, bounded N. by Gourma, S. by Eyeo, or Yarriba, E. by the Niger river, and W. by Dahomey. It is generally a level country, though crossed by a range of mountains. The soil is fertile, well cultivated, and productive of corn, yams, plantains, and limes. All the varieties of game which prevail in Africa are found here in abundance. When Clapperton visited Borgoo, he was told that the natives were the most dishonest people of Africa; but his experience convinced him that this bad reputation was undeserved. He found them good-humored and obliging; nor, during his stay in the kingdom, was he ever robbed of the slightest article. The slaves of the governors and chiefs, however, pilfered every thing that came within their reach. These slaves were natives of the neighboring country of Houssa. Borgoo is divided into the four states of Boussa, Wawa, Kiama, and Niki. Boussa, which holds the first rank, is noted as the scene of the disastrous fate of Mungo Park.

BORGOO, another country in central Africa of the same name as the preceding. It has never been explored by Europeans. It is a mountainous region, forming a connecting link between the basin of Lake Tchad and the basin of the Nile. The air is said to be remarkably pure, and the soil well watered by perennial rivers, and very fertile in date-trees. The inhabitants belong to the powerful Arab tribe of the Uelad Solyman. In the year 1851 an unsuccessful attempt to explore this region was made by Dr. Barth and Dr. Overweg. They set out with a large army, despatched by the sheik of Bornoo for the invasion of the countries eastward from Lake Tchad; but before they could reach Borgoo this army was attacked by the enemy, defeated, and put to flight. Barth and Overweg saved their lives only by a quick retreat.

BORIE, **PIERRE ROSE URSULE DUMOULIN**, a French missionary, born Feb. 20, 1808, at Beynat, put to death in Tonquin, Nov. 24, 1838. Having determined to become a priest, he diligently applied himself to his studies, and led an exemplary life; but his restless and aspiring spirit was always in search of some field of heroic achievement. Finally he was ordained and sailed for Tonquin, his appointed mission, Dec. 1, 1831. He

arrived in Tonquin just at the commencement of a bloody persecution, carried on by the tyrant Minh-Menh against his Christian subjects. He very soon learned to speak the language and accommodate himself to the habits and temper of the Tonquinese, and, notwithstanding the difficulties placed in his way by the persecution, he labored with great zeal and success during 6 years. In 1838 he was apprehended, severely beaten, and imprisoned, and after 4 months condemned to be beheaded. He bore his tortures with fortitude, and wrote several letters from his prison to his relatives and friends in France, breathing the most heroic sentiments. He was executed in company with 2 native priests. The mandarin expressed to him his regret at the necessity he was under of obeying the orders of the king, and the officer who commanded the escort of troops wept when he bade him farewell. He was escorted to the scaffold by a guard of honor. The native priests were strangled. Borie seated himself on the scaffold, and, without betraying the least trepidation, laid bare, with his own hand, his neck and shoulders. No one of the soldiers was willing to perform the office of executioner, and the one who was compelled to do it, intoxicated himself in order to gain courage for the hateful office. Through awkwardness and confusion he prolonged the sufferings of the missionary by striking several ineffectual blows. The first struck him on the cheek, the second on the shoulders, and it was not until the seventh stroke that the head was severed from the body. The heathen venerated Borie as one of the greatest of heroes, and even honored him as a divinity, by burning gold paper over his grave. He was appointed bishop and vicar-apostolic, just before his death, but was never consecrated. His bones were brought to Paris, and are preserved in the chapel of the foreign missions.

BORING is the name common to 2 distinct mechanical operations, which bear different appellations in most languages. The one consists in turning the inside surface of cylinders to make them true, the other in cutting holes through solid matter. Cylinders of a diameter smaller than 4 feet are bored on a lathe; the cylinder is fastened to the slide-rest, and the tool is keyed on a mandrel or boring bar held between the centres of the lathe; the cylinder moves lengthwise, and the tool revolves so that the cut is helical. Large cylinders of the thickness usual for steam engines cannot be bored horizontally, as their weight is sufficient to deflect them when resting on the side; they are bored on a boring machine. This important tool is of modern invention, and is found only in those large establishments where huge steam engines are built. Boring machines are made to order in England and Scotland; in the United States they are built in the shops where they are wanted. A boring machine is generally placed in a corner of the shop formed by 2 solid walls. It consists mainly of a vertical shaft placed below the floor, supporting a

vertical boring bar which carries a horizontal cutter-wheel, and of a strongly ribbed bed-plate on which are 4 movable standards or supports, with clamps to hold the cylinder in a vertical position. The lower end of the shaft rests in a socket on strong foundations; the upper end is keyed loosely to the boring bar, and supports it. The boring bar is guided by 2 adjustable boxes, the lower one forming a part of the bed-plate, the upper one, part of an iron beam strongly bolted and braced to the walls. The shaft and boring bar are made to revolve by a train of wheels placed under the floor. The cutter-wheel, on which are bolted several tool-carriers, descends slowly along the boring bar. To operate with this machine, the boring bar is at first withdrawn, to make room for the cylinder, which is placed on the standards, and then the bar is put back in its place inside the cylinder. This last is then so adjusted as to have the same axis with the boring bar, and is firmly clamped. Cutting chisels are set on the tool-carriers; these are adjusted for the depth of cut desired, and the machine is put in motion. After the cutter-wheel has come down the whole length of the cylinder, it is raised by means of a revolving crane for another cut. Boring machines were made to avoid the bulging of the sides of cylinders when placed horizontally, as this was the main impediment to good boring; they also avoid the deflection of the boring bar. They require much less power than lathes to do the same work, and have several other minor advantages. The largest of these machines in existence is said to be one built in Glasgow, by O. and A. Harvey, for Robert Napier's machine-shop. It weighs 30 tons, is 25 feet high, and 14 feet wide. It can work at from $2\frac{1}{2}$ to 16 revolutions a minute; can bore a cylinder 10 feet in diameter, and 7 feet 8 inches long, and can take feed from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch per revolution. This boring machine can also be used as a drilling machine for boring holes 10 inches in diameter through solid iron.—BORING TOOLS for drilling holes. If these tools had only to cut away a portion of matter, as is done in cutting, planing, and turning, the directions given for cutting tools as to the angles of the faces of the edge with the work, the velocity, and the lubricating liquid proper for the substance to be cut, would have to be strictly applied. Such is not the case, however; a drill has not only to turn off the bottom of the hole, but also to pare its sides, to guide itself in a straight line, and, for wood and some other substances, to eject the shavings. Moreover, the velocity is unavoidably different at all points from the centre to the circumference. In consequence, the rules given for cutting tools are observed in boring tools only as far as they accord with other important requisites; but they must never be lost sight of. Drills are made, in general, to bore straight holes, by providing them with a centre-point or pin projecting beyond the cutting edge just in the centre of the hole, or by tapering

the cutting edges to a point. Drills are made to bore clean holes, by providing them with a shearing point on the side, that cuts like the point of a knife; or by prolonging the cutting edge along the side; or, for metal, by making a reamer with the stem of the drill. Boring tools are made to eject the material cut away, by shaping the stem in the form of a screw, or by making it hollow. The various tools used for boring wood are as follows: the brad-awl is a cylindrical wire, with a chisel edge; it packs the material around the hole. The awl is a square bar tapering to a point. A great number of tools are fluted, that is, have the shape of the half of a tube. Such are the shell-bit, the gouge-bit, the spoon-bit, the table-bit, the cooper's dowel-bit, the brush-bit, the nose-bit, or auger-bit. The gimlet is fluted, but terminates in a screw, which drives it into the wood. The centre-bit, an instrument of English invention, was totally unknown in continental Europe 80 years ago. It consists of a centre-point, a shearing-point, and a broad inclined cutter. Its variations are called plug centre-bit, wine-cooper's centre-bit, expanding centre-bit. The tools in the form of a screw are the single-lip auger, made of a half round bar wound spirally around a cylinder; the twisted gimlet, made of a conical shaft, around which is cut a half round spiral groove; the screw auger, formed of a flat band of steel twisted when red hot; the American auger, made of a solid shaft, around which is a thin helical fin. The last much resembles a wood screw; the cutting edge is removable, and resembles that of a centre-bit. All these twisted tools are of American invention, and were scarcely known in Europe 15 years ago. Another American tool is an auger for producing square holes or cutting mortices: it consists of a screw auger working in a tube, round inside and square outside; the four corners at the lower end of the tube are sharpened from inside, and proceed forward a short distance behind the cutting edge of the auger, cutting through the wood as they advance, and making the round hole square. Several of these tools working side by side will cut an oblong hole. Boring tools for wood are worked by means either of a lathe, a carpenter's brace, a transverse handle, or a drilling machine.—Boring tools for metal are called drills, and are much less varied in shape than those for wood. The double-cutting drill is made by flattening the end of a small bar of steel, cutting it so as to form a point or projecting angle of about 90° in the centre line of the tool, and grinding on both sides to transform the 2 flats, forming the angle into edges of about 60° sharpness. Another double-cutting drill, called the Swiss drill, is made of a wire filed on one side to the diameter, the end of the remaining half being ground in the shape of a half cone. These drills are used with a drill bow, by watchmakers and musical-box makers, but only for very small holes. The common

single-cutting drill is forged flat and cut pointed, so as to show at the end 2 small faces meeting at an angle of 90° , and forming a point projecting in the centre line of the tool. These two faces are ground so as to form angles of 60° with the flat sides of the tool; the one face forming this angle with one side, the second face with the other. This drill is in universal use, the angles specified being slightly modified according to the nature of the metal to be bored. To turn horn and composition, or bronze, which substances clog the drill by forming a paste around it, the drill has to be cut less pointed, the faces ground more inclined, and the small sides of the drill have also to be ground inclined to the flat sides, so as to form a reversed drill, by means of which the tool may cut its way out of the hole. It is nearly impossible to drill a hole in the exact place where it is designed to be, and the error is proportional to the size of the drill. For this reason, when exactness is required for a large hole, a small hole is drilled first, and this is enlarged by means of a pin drill. The shape of a pin drill is exactly represented by placing 2 carpenter's chisels side by side, the one presenting its face, the other its back, to the person holding them, and by letting the end of a wire project between them a little below the edges. In using the instrument, the centre pin must enter and fit the small hole previously bored, which acts as a guide. If the portion of the cutting edges nearest the centre pin is cut away, the tool will cut a circular groove; such is the form adopted for cutting holes in the tube plates which receive the tubes in locomotives. These drills are worked in various kinds of braces, in the lathe or in the drilling machine. After they are drilled, the holes of all carefully made machines, which are not tapped, are perfected by reaming. A large proportion of holes drilled are intended for screws, and are consequently tapped. Taps, master-taps, stocks, dies, and reamers, are costly tools; hence it is the interest of machinists to devise and adopt a uniform system in drilling and making screws, so that a machine may be repaired in another shop than that of the maker, without the necessity of making a new set of tools for each particular case. Mr. J. Whitworth, the great machinist of Manchester, England, has planned and introduced in Great Britain a regular system for holes and screws, which has also been adopted in the United States by gas fitters, and in a few machine shops, where perfection rather than quantity of work is aimed at. Holes and screws of a diameter comprised between $\frac{1}{16}$ of an inch and 6 inches, are the only ones considered; from $\frac{1}{16}$ to $\frac{1}{4}$ of an inch only those measuring an exact multiple of $\frac{1}{16}$ are used; from $\frac{1}{4}$ to 2 inches, only those measuring an exact multiple of $\frac{1}{8}$, without fractions; from 2 inches to 6, those measuring an entire multiple of $\frac{1}{4}$ inch. Standard holes of these dimensions in hardened cast steel, with a plug to fit, are made at Whitworth's; a set was

imported into this country by the Messrs. Hoar, for building their fast presses, and from the use of these and other gauges, they now reap the advantage of building presses for the London press in England, with nearly as little risk of inaccuracy as if they were made in their own shop by men accustomed to the work. From Whitworth's standards, or from accurate measurement, 3 other gauges have to be made for the use of the shop. The first, called clearing-holes, in which each hole is a little larger than the multiple of $\frac{1}{16}$, $\frac{1}{8}$, or $\frac{1}{4}$ of an inch stamped by the side of them, is used to gauge the width of drills intended to make holes large enough for bolts of the diameter of the same mark to pass through. The second, tapping-holes, is a gauge for drills intended for holes in which a thread has to be cut; these holes are smaller than their mark by twice the depth of the corresponding screw thread. The third is called reaming holes; the holes made by drills gauged in it, have to be reamed to be of the same size as the standards.—Substances very soft and yielding, as well as those extremely hard, cannot be bored with the tools described for wood and metal; but other processes are employed. Chemists bore the numerous corks they use for connecting glass tubes with a red-hot pointed rod, afterward cleaning the hole and making it of the requisite size with a round file. Cork may also be bored with a sharpened tube or round cutter, if this be oiled and made to rotate 15 times faster than it advances in the cork, as is seen in a patented cork-cutting machine. Hard steel and glass are bored with the end of a rotating brass rod fed with oil and emery. Glass offers also this remarkable and little known peculiarity, that it is drilled through as easily as hard woods, with a common metal drill, provided the drill is kept all the time moistened with turpentine. The discovery of this curious fact is ascribed to Mr. J. Stewart, of New York, and the experiment has been repeated with perfect success by the writer of this article. It is a striking illustration of the importance of lubricators, and of the intimate connection between the sciences, as after this there is no absurdity in thinking that chemistry may one day furnish machinists with the means of working metal as fast as they now do wood.—Holes 2 inches in diameter and 8 feet deep, are cut through rock for the purpose of blasting, by striking the bottom of the hole with the chisel-like end of a heavy bar of iron; the workman holds the bar in his hands, and takes care to make it revolve a quarter of a circle between each stroke. Several machines have been invented to render the work more easy, but they are not as yet much used. This is due partly to the prejudices of the laborers employed in that kind of work, partly to the difficulty of handling and adjusting machines on uneven ground, among loose stones. In these machines the bar moves lengthwise between guides, and is constantly pressed down by a

spring. By means of a shaft, a crank, and a cam, the bar is forced up against the spring, describing a quarter of a circle in its way. Before the crank has made a whole turn, the bar is suddenly released, and strikes the ground with a power equal to that accumulated in the spring. A large patented machine of this class, provided with a portable steam engine, and containing several new features, was exhibited five years ago in New York by G. A. Gardner, its inventor.—Experiments have been made in boring tunnels by machinery in Mont Cenis (Alps), and in the Hoosick Mountain at Adams, Mass. The machine is carried on a truck, and consists of a large vertical wheel with a horizontal boring bar in its centre. It is wheeled close to the wall which is to be bored, and the central bar is made to cut a hole in the rock. This bar is then removed, and the hole is used to firmly bind the machine to the rock. The large wheel is then made to revolve, cutting in the rock a circular groove, of the diameter of the intended tunnel, by means of cutters carried on its periphery. These cutters are made to cut or to strike, and to work slow or fast, according to the nature of the stone. After the groove is cut as deep as the length of the tools allows, the machine is unfastened from the rock, and drawn back a few steps, when a charge of powder is placed in the central hole, and fired. The huge ring which was cut in relief on the wall comes down in fragments, leaving the sides of the tunnel neatly cut.—For an account of BORING FOR WATER, see ARTESIAN WELLS.

BORISSOV, a district in the Russian government Minsk; pop. 109,800, with a capital of the same name; pop. 5,000. Near the adjacent village, Studianda, the Beresina was crossed by the French army, Nov. 26 and 27, 1812.

BORKUM, an island in the North sea, on the coast of East Friesland, belonging to Hanover (jurisdiction of Aurich). It is situated at the mouth of the Ems, is about 6 miles long by 2 miles broad, and has a low surface. A narrow channel divides it into two parts, on one of which is a light-house. The 500 inhabitants support themselves by agriculture, fishing, and shipping, and speak the Frisian dialect.

BORLAGE, EDMOND, an Anglo-Irish historian, a physician by profession, died at Ochester, in England, about 1682. He wrote "The Reduction of Ireland to the Crown of England, with the Governors since the Conquest by Henry II. in 1172" (London, 1675); "The History of the execrable Irish Rebellion, traced from many preceding acts to the grand Eruption, Oct. 28, 1641, and thence pursued to the Act of Settlement, 1661" (London, 1680), and other works.

BORLASE, WILLIAM, an English clergyman, antiquary, and naturalist, born at Pendeen, in Cornwall, Feb. 2, 1696, died Aug. 31, 1772. He wrote various works on the mineralogy,

natural history, and antiquities of his native region; also a history of Cornwall, a paraphrase of Job, and other works. He had a large correspondence with many of the most eminent literary men of his day, particularly with Pope, a large collection of whose letters to Borlase is still extant. Pope's grotto at Twickenham was made out of fossils and spars furnished by Borlase from the Cornish excavations.

BORMIO (Germ. *Worms*), a town of the Austrian province of Sondrio, in Lombardy, near the Adda; pop. 2,000. In its vicinity are the salt baths called *Bagni di Bormio*. The temperature is 99° 5'. Gen. Dessolles achieved here a victory over the Austrians, March 26, 1799. The beautiful galleries of the road which leads over the *Wormser Joch* (an Alpine mountain), from Tyrol to Italy, were destroyed by the Italians in 1848.

BÖRNE, LUDWIG, a German politician and author, of Jewish origin, born May 18, 1786, at Frankfort-on-the-Main, died in Paris, Feb. 13, 1837. His father, Jakob Baruch, was a wealthy banker, and his grandfather a man of great dignity of character, and an accomplished diplomatist, employed by Prince Thurn and Taxis as ambassador to Vienna. The associations of his grandfather first turned young Börne's attention to politics, and after studying at Berlin, where he became intimately acquainted with the celebrated Henrietta Herz, and with Schleiermacher, he attended lectures on medicine at the university of Halle, but eventually at Heidelberg, and in 1808, at Giessen, devoted himself more exclusively to the study of political science. On his return to Frankfort he received an employment in the police office, which he held until Frankfort was reinstated in its position as a free town, when he devoted himself to literary labor, by publishing at Offenbach (to escape the Frankfort censorship) the *Staats-Ristretto*, and the *Zeitschwingen*, 2 journals, which, however, were stopped by the grand duke of Hesse Darmstadt, to whose little realm Offenbach belongs. At the same time he was arraigned at Frankfort upon a charge of circulating seditious pamphlets, but acquitted. In 1817 he became a convert to Christianity, and was baptized, on which occasion he relinquished his family name of Baruch and adopted that of Börne. From 1818 to 1821 he edited the *Wage*, a family paper, containing philosophical and artistic, but scorching and witty, criticisms on the stage, which rank to this day among the highest specimens of theatrical criticism. Until 1830 he lived principally at Paris, Hamburg, and Frankfort, in great isolation, at war with the order of things in Europe, and too apt to display the bitterness of his feelings. After the July revolution, he founded at Paris a new paper, *La balance*, with a view to create a closer intellectual and social union between France and Germany; at the same time he published letters, in which he castigated the European, especially the German despots, with a spirit so French in its keen wit and brilliant

gayety, and so German in its depth of thought, displaying such undisguised contempt for French frivolity and such uncompromising disgust for German pedantry, that he filled the French with admiration for his genius, and the Germans with respect for his philosophy and scholarship. These letters are included in his *Gesammelte Schriften* (17 vols., Hamburg, 1829-'81), which, together with his *Nachgelassene Schriften* (Mannheim, 6 vols., 1847-'50), form the bulk of his contributions to literature, excepting those to the German press, while *La balance* (included in the 17th vol.) was written in French, a language which he mastered admirably, catching its most delicate points with singular tact and sagacity. Of his miscellaneous writings his most elevated composition is his *Denkrede auf Jean Paul*. In this, his deep sympathies with a genial thinker like Richter found eloquent expression, and never before or since has the German sage been reviewed by a spirit so kindred to his own. He answered Menzel's onslaught on the French in a crushing manner, in his *Menzel der Franzosenfresser*, a perfect tornado of satire. The celebrated Heine hated him, and wrote a work arrogantly entitled *Heine über Börne*, implying his superiority over his rival on the very title-page, in which he reflected upon a virtuous and accomplished lady, Madame Wohl, an intimate friend of Börne, and his devoted nurse in his days of sickness. A monument, executed gratuitously by David d'Angers, has been erected to his memory in Père la Chaise by his friends. Since the revolution of 1848, his homestead in the Ghetto of Frankfort has been restored and decorated, so that the only 2 houses which now break the monotony of that crumbling and dirty quarter, are those of Rothschild and of Börne.

BORNEO, an island of the Malay archipelago, lying under the equator, and next to Australia the largest in the world. Its greatest length from Cape Sampanmanjo, N., to Cape Salatan, S., is 776 miles; its greatest width from Cape Kanioongan, E., to Mount Pamankat, at the mouth of Sambas river, W., 685 miles. It has nearly 8,000 miles of sea-coast; area, 816,820 sq. m., 7 times the extent of Cuba, and a little larger than the state of Texas; pop. estimated at 2,500,000. The outline of Borneo is but slightly indented by bays and inlets; and yet the skeleton of its mountain ranges, now well ascertained by the travels of Dalton, Low, Burns, and Schwaner, show that, at not a very remote period, it must have presented the same singular configuration with Celebes and Gilolo, that of a group of peninsulas. Starting from the central mountains, the Anga-anga group, and proceeding N. E., we trace a chain, terminating in Kinibaloo (11,000 feet high, the highest peak in Borneo), which forms the backbone of the peninsula, comprising the Brunai and Sooloo territories; diverging E. from the same central point, we trace the Sakoorroo range, which forms the water-shed of the Coti peninsula; again, Mounts Katam,

Looang, and the Meratoos chain, form the water-shed of the S. or Banjarmassin peninsula; the Kamintang chain to Mount Penampungan forms that of the S. W. or Kotta-Waringin peninsula; and Krimbang, Batang-Loopar, and Pangki mountains, form the shed of the short W. peninsula, terminating at Cape Dato. As in the configuration of Celebes and Gilolo, there are 4 clearly indicated peninsular arms extending N. E. and S., and a 5th, a short projection W. The valleys between these mountain ranges are mostly impenetrable swamps, so much submerged at times as to resemble shallow bays, penetrating far into the body of the island; and when we consider that the deep bays of Celebes are filling up, that of Tomini, accessible to Portuguese frigates in the 16th century, now scarcely floating a small native craft, it is evident that a gradual upheaval of the central body, or what is termed the sedimentary and plutonic portion of the archipelago, has taken place, and that Borneo is probably of as recent geological formation as Australia. Hardly $\frac{1}{4}$ of the island is good *terra firma*, habitable for man; and this must be evident when we consider the thinness of the population, about 7 to the sq. m., which is proportionally 50 times less than that of the neighboring island of Java. An alluvial marshy band, varying from 30 to 50 miles in width, surrounds the island, the only avenues to the interior being its numerous rivers and streams. The mouths of 28 rivers, all navigable on an average 100 miles for vessels drawing not more than 12 feet water, can be counted along the N. W. coast, between Capes Sampanmanjo and Dato. Berow and Ooti rivers on the E., Banjar, Marong, Kahajan, and Mendawai rivers on the S., and the rivers Pontianak and Sambas on the W., are large streams with tides flowing far up, and some of them navigable for 200 miles. Innumerable smaller streams flow from the great water-sheds. But few lakes have been discovered; only 2 considerable ones, Sumbah and Samar, 250 miles up the Pontianak river, and 4 inconsiderable ones in Banjarmassin territory. Of one called Kinibaloo, and indicated on the maps in the N. E. peninsula, we have no account from any European eye-witness.—The geological formation of the mountain ranges is composed of granites, schists, sienites, and limestones, and in portions of the extensive intermediate savannas, a rich vegetable mould overlies the quartz formation. The best fossil coal of the archipelago crops out abundantly, in Brunai and Banjarmassin, at the N. and S. extremities, and it is evident that coal fields extend the entire length of the island. The coal is easily mined, and can be produced at points in Banjarmassin, ready for shipment, at a cost of \$1 25 per ton. Iron of a superior quality abounds in the S. portion; in Tanah-laut, large fields and masses of 400 and 500 cubic feet of rich ferruginous earth have been found, which will yield 98 per cent. of red oxide of iron, and 70 per cent. of pure metal, possessed of strong magnetic properties, and esteemed

superior to the best Swedish; and from this the natives make the best cutting blades of the east, although they use also Sumatran iron. Antimony is obtained so plentifully in Sarawak, on the N. W. coast, as to furnish the chief supply of the world; upward of 2,000 tons of Sarawak antimony being annually shipped from Singapore. It is found also in Bintula, N. of Sarawak, but has not been mined there. Gold is found in a belt stretching across the island, between lat. 2° N. and 1° S., corresponding in latitude with the range of the gold deposits of Sumatra and Celebes. It has been obtained thus far only from alluvial washings in the form of small grain, and rarely in nuggets of the dimensions found in California. The annual product, for several years past, has been estimated at about 850,000 ounces. Diamonds are found in the Landak district, 40 miles N. of the equator, and at points thence in a S. E. direction toward Banjarmasin, and are found nowhere else in the archipelago. The gems are obtained at depths varying from 20 to 30 feet; 6 different alluvial strata occur before reaching the diamond yielding one; these strata are a black mould, a yellow sandy clay, a red clay, a blue clay, a blue clay intermixed with gravel, and, lastly, a stiff yellow clay, in which the precious stones are imbedded. The largest Bornean diamond, in possession of the sultan of Matan, weighs 367 carats. The wild Dyaks work the mines; the product in 1850 was 2,100 carats. No tin nor copper has been found.—The vegetative aspect is luxuriant and gorgeous, although the soil is generally unfavorable to the production of grains suitable as food for man. The exchangeable vegetable products are benzoin, found in Brunai territory alone, sago, camphor, gomati palm sugar, exclusively used by natives of the archipelago, and ratans, the latter found in Banjarmasin territory, are worth 100 per cent. more than those of any other country, and are exported to the value of \$500,000 annually. Valuable timber trees of enormous dimensions abound in the forests.—The island has none of the ferocious felines found in Sumatra and Java, which would not permit the existence of such numerous families of the larger species of ape, which throng the Bornean jungles. Several species of the orang-outang, or *simia satyrus*, attain here their largest development, and nearest resemblance to man. None of the canine family exists, except the domestic dog. Only one carnivorous animal is found, a small leopard, from the skin of which the Dyak pirates make their martial coats. There is the small Malay bear, the porcupine, and several varieties of the otter and squirrel families. The elephant is not a native, although a few have been found in the N. E. peninsula, but evidently the progeny of some escaped from confinement that had been imported by Bornean sultans. A singular species of white bearded hog (*sus barbatus*) abounds; also the tapir, a fine species of buffalo, the beautiful kancheel, or diminutive Malayan

deer, and the large horse deer (*ceruus equinus*). Of reptiles, there are none of the large venomous serpents that infest islands of the volcanic band; there is a peculiar kind of crocodile, resembling the gavia of the Ganges. The feathered creation is varied and numerous, distinguished less for its song than for plumage of gaudy, dazzling colors. The jungle fowls of Sumatra and the Malay peninsula are all wanting. The insect world presents some very large and beautiful varieties; butterflies, 9 inches from tip to tip of the wings, appear like large flowers in the trees; and there are flowers much resembling these butterflies. Myriads of gaudy winged, and some peculiarly scented insects mingle with the foliage, and the bee produces wax and honey in abundance—important items of export.—The population of Borneo is divisible into 4 classes: the ruling Malays, forming, probably, not more than $\frac{1}{2}$ of the whole; the aboriginal Dyak, about $\frac{2}{3}$; 250,000 Chinese; and about 80,000 colonists from Celebes. The Malays claim their origin from Menangkaban, the central and once dominant state of Sumatra. The native Dyak is of larger average stature than the Malay, of a lighter brown complexion, more muscular, though not so active in movement, and much inferior in point of civilization and political capacity. The Dyaks are divided into a large number of petty tribes, of which upward of 100 are enumerated, speaking different dialects like savage tribes of Africa, subsisting, some by fishing and hunting, but the larger portion by agriculture. The traits of their character exhibit many favorable points; when kindly treated they are docile, industrious, and faithful, though, at the same time, they have been notorious as pirates, and, owing to a horrible superstition, hunters of the heads of their fellow-men, believing, as some affirm, that those decapitated will be their slaves in the world after death, while others regard them as signal trophies. They exhibit in character many of the good and bad qualities of the New Zealanders, when first discovered, and like them, show excellent results under civilization, probably more than any other people of the archipelago. They are regarded by all travellers as much superior in natural disposition to their Malay masters. However, the Dyaks cannot be regarded as generally subject to the Malays; for though a small portion on the coasts are enslaved, the great body of them maintain their independence in the extensive central mountain ranges and valleys. Some of them are half clad, barbarian nomads; but the greater portion have substantial dwellings, and cultivate rice, the banana, sugar cane, and some cotton and tobacco for their own consumption. They are skilful artificers in iron; the sword blades, mandows, and kreeses of the southern Dyaks, have now a high European reputation. They spin and weave, and have domesticated a few small animals, but no beasts of burden, the laboring ox and horse being unknown to them. No Bornean tribes have invented letters. There

has evidently been much intercourse with Java, as attested by so many names of places, and of things in common use; and remains of ancient Javanese temples have been found far in the interior. The intercourse with Celebes is very great, and the enterprising Bugis race of that island compete successfully with the Malays for the trade of the coasts. The Chinese are the chief miners of gold, and traders of the towns and villages where European dominion is established.—De Barros says that the Portuguese discovered Borneo in 1526; but the earliest mention of it is to be found in the "Itinerary" of Ludovico Barthema, who visited the archipelago between 1508 and 1507. No portion was taken possession of by Portuguese or Spanish commanders, as the island, at every approach, presenting its impassable alluvial coast belt, seemed to offer no commercial advantages like Sumatra, Java, and the Moluccas. The Dutch, under Van Noort, first appeared in Borneo in 1598, but did not begin to trade till 1664. Their sole object then was to secure the monopoly of pepper, to the exclusion of all other European traders, and they made a treaty to this effect with the sultan of Banjarmassin, where they established a factory. They were expelled after a few years, through the intrigues of the English. They returned in 1778. In 1785 they rendered important military services to the reigning prince, in a case of disputed succession, who, out of gratitude, ceded to them the sovereignty of his dominions. In the same manner, taking advantage of the weakness of petty princes, they have, by treaties, been enabled to claim sovereignty over all that portion of the island south of a line running from Cape Dato, W., to Cape Salatan, E.; but the great body of it is inhabited by independent interior tribes, who have no knowledge of the contests between the Malay and Dutch sovereignties on the coast, or even of their existence. This extensive territory claimed by the Dutch, nearly twice as large as the state of New York, is probably a burden upon the Netherlands' Indian treasury; as the gross amount of its revenue, only \$120,000 in 1853, would not cover the expense of its establishments at Banjarmassin, Coti, Pontianak, and Sambas. The English had trading factories for a short time in Borneo, during the 17th century; but have not had any territorial possessions, if we except the settlement, in 1775, of Balambangan, an island geographically belonging to Borneo, and ceded by the sultan of Sooloo, and the still more recent settlement of another island, Labooan, in 1846, ceded to the British government by the sultan of Brunai, and upon which an English company are now engaged in mining the coal with which it abounds. This latter cession was obtained through the influence of Sir James Brooke, better known in the East as Rajah Brooke. This enterprising gentleman, pursuing the policy of the Dutch in their relations with Bornean princes, having, with a small armed vessel of his own, rendered military aid to the sultan of

Brunai, obtained from him the cession of a territory called Sarawak, bounded S. by the Dutch province of Sambas, extending thence from Cape Dato along the coast N. E. 80 miles, with an average breadth of 50 miles. The value of the exports, in 1854, from Sarawak, was \$1,125,000, and of the imports over \$800,000. The net revenue of the rajah from seigniorage on antimony mines, and other sources, was \$120,000, or \$20,000 more than the gross revenue of the Dutch, controlling more than 20 times the extent of territory on the same island. The British enjoy a large trade with Borneo, chiefly carried on through the free port of Singapore, which is much more valuable than that of the Dutch.

BORNHAUSER, THOMAS, a Swiss divine, poet, and political reformer, born May 26, 1799, at Weinfelden in Thurgau, died in March, 1856. He began political life in 1880 by exciting publications in favor of changing the constitution of Thurgau. In 1887 he carried through a measure for subjecting religious estates to the administration of the state. On one occasion the aristocratic party opposed his election to the great council, as the Thurgau law does not permit clergymen to become members of political bodies; but he was elected notwithstanding, and the exasperation against him became so violent, that one of his political opponents even threatened his life. In 1882 he published a collection of songs, and in 1886 an epic poem, *Heinz von Steia*. He was one of the editors of a political journal in St. Gall, called *Der Wächter*, and in 1833 he compiled a collection of the constitutions of the Swiss cantons.

BORNHOLM, an island in the Baltic, owned by Denmark, but geographically and geologically belonging to Sweden; about 28 miles long by 18 broad; area 230 sq. m.; pop. 28,000. The coast in most places is high and rocky; where cliffs are not seen, dangerous reefs and sand banks stretch out to sea. There are no good harbors for large vessels. The land is generally fertile, and produces the same grain crops, and the same kinds of trees, except the beech, as the rest of Denmark. The island produces coal, marble, and building stone, earthenware, fish, sheep, and cattle.

BORNOO, or BORNOU (called by the natives *Kanowra*), a country of central Africa, bounded on the N. by the Great Desert, on the S. by Mandara, on the E. by Lake Tchad and Begharmi, and on the W. by Houssa. The chief rivers are the Waube, generally but improperly called the Yeou, and the Shary. The former rises in the mountains of Houssa, flows first north, then eastward through Bornoo, and empties into Lake Tchad. The Shary takes its rise in the mountains of Mandara, and is the more considerable river of the two. Lake Tchad receives its waters also. This lake is one of the most remarkable natural features of the country. During the dry season, when the streams by which it is fed are reduced in size, its waters recede, and leave uncovered a tract of many miles in extent, to be

again overflowed when the rivers are swollen by the rains of the wet season. The fertility caused by this inundation produces only a rank growth of grass from 10 to 12 feet in height, and almost impenetrable thickets of trees and underwood. When the lake encroaches upon these regions, the numerous wild animals and serpents with which they are filled seek refuge in the cultivated and settled tracts of country, and spread terror among the inhabitants. The climate of Bornoo, especially from March to the end of June, is excessively hot. During the rainy season, from May to October, great numbers of the inhabitants are carried off by fever and ague. The soil is fertile, and though but imperfectly cultivated, produces large crops. A species of millet forms the staple food of the Bornooese; rice and grain of an inferior kind are also grown in small quantity. There are no fruits, and minerals are unknown. The population is variously estimated at from 5,000,000 to 9,000,000. The mass of the people, called Bornooese, or Kanowry, present a complete specimen of the negro form and features. They are peaceable and courteous, but resentful and addicted to pilfering. The pastoral districts are occupied by an Arab race called Shouas. They have fine open countenances, with aquiline noses, large eyes, and a complexion of light copper. They are described as being arrogant, deceitful, and dishonest. The Mohammedan religion is universally professed, and that with a violence and bigotry scarcely paralleled. The government of Bornoo is nominally vested in a sultan, but all the power really resides in an officer called the sheik. The sultan is surrounded by a body-guard of nobles and chiefs, clad in the most grotesque and unwieldy attire to which the custom of any country has given rise. The rank of an officer or noble is indicated by the number of robes which are wrapped about his body. Notwithstanding the heat of the climate, as many as 10 or 12 are sometimes worn. It is considered indispensable that the sultan should present a corpulent appearance, and when high feeding cannot effect the desired result, stuffing is resorted to. The military force of this monarch amounts to about 80,000, mostly cavalry. The principal towns are Kuka, the royal residence, Engornoo, Deegoa, Old and New Birnie, and Affagay. Most of them are populous, well built, and enclosed by walls. The country was visited by Barth, Overweg, and Richardson in 1851-'54.

BORO-BODO, a remarkable ancient edifice in the island of Java, situated in the province of Kadoe, near the Probo river, about 25 miles N. W. of the native capital of Yuyakarta. Upon a quadrangular base, measuring 620 ft. on either side, there rise to the height of 116 ft. 7 stories of sculptured walls, each story, as you ascend, receding within the area of the one below, and leaving a broad terrace between each succession of walls. Upon the topmost terrace are 8 circles of small, round, bell-shaped

fanes, 72 in number, and from their centre springs a pointed dome, 50 ft. in diameter, which crowns this singular pyramidal structure. It is built upon, or rather hewn, like the temples of Arabia Petra, out of a hill of trachytic stone in the centre of the plain of Probo, which lies between 4 grand volcanic peaks, Sindoro, Sumbing, Merbaboo, and Merapi, the highest of which is 11,080, and the lowest 9,000 feet above the level of the sea. The architecture of the different façades, in the proportions of the arched entrances, the flights of steps, the sculptured niches, and many cupolas at frequent intervals decorating the walls, and in the proportions and finish of the terraces and crowning dome, is grand and elegant; but a profusion of sculpture in low relief overloads and mars the chasteness of the outline. On a square of 14 feet upward of 1,000 figures have been counted, representing ceremonials, processions, chariot races, battles, and also sea views and naval engagements. There are 400 colossal images in the temple. The date of its construction is, according to the opinion of many oriental antiquaries, fixed as late as 1850, and the perfect state of the edifice does not show a more remote antiquity; but though not more than 500 years old, such is the imperfect character of Javanese records, so many have been the wars, revolutions, changes of dynasties, and migrations of people during that period, that the present inhabitants of the surrounding country, and indeed of the island, know nothing of its purpose, nor when nor by whom it was built. It has evidently been devoted to the worship of Buddha, the chief Asiatic deity.

BORODINO, a village on the left bank of the river Kolotcha, in Russia, about 2 miles above its junction with the Moskva. From this village the Russians name the great battle, in 1812, which decided the possession of Moscow; the French call it the battle of the Moskva, or of Mozhaïsk. The battle-field is on the right bank of the Kolotcha. The Russian right wing was covered by that river from its junction with the Moskva to Borodino; the left wing was drawn back, *en potence*, behind a brook and ravine descending from the extreme left, at Utitsa, toward Borodino. Behind this ravine, 2 hills were crowned with incomplete redoubts, or lunettes, that nearest the centre called the Rayevski redoubt, those on the hill toward the left, 8 in number, called the Bagration lunettes. Between these 2 hills, another ravine, called from a village behind it that of Semionovskoye, ran down from the Russian left toward the former ravine, joining it about 1,000 yards before it reached the Kolotcha. The main road to Moscow runs by Borodino; the old road by Utitsa, to Mozhaïsk, in rear of the Russian position. This line, about 9,000 yards in extent, was held by about 180,000 Russians, Borodino being occupied in front of the centre. Gen. Kutusoff was the Russian commander-in-chief; his troops were divided into 2 armies, the

larger, under Barclay de Tolly, holding the right and centre, the smaller, under Bagration, occupying the left. The position was very badly chosen; an attack on the left, if successful, turned the right and centre completely; and if Mozhaisk had been reached by the French before the Russian right had retreated, which was possible enough, they would have been hopelessly lost. But Kutusoff, having once rejected the capital position of Tsarevoye Zaimishtche, selected by Barclay, had no other choice. The French, led by Napoleon in person, were about 125,000 strong: after driving the Russians, Sept. 5, 1812, N. S. (Aug. 26, O. S.), from some slight intrenchments on their left, they were arranged for battle on the 7th. Napoleon's plan was based upon the errors of Kutusoff; merely observing the Russian centre, he concentrated his forces against their left, which he intended to force, and then cut his way through toward Mozhaisk. Prince Eugene was accordingly ordered to make a false attack upon Borodino, after which Ney and Davoust were to assail Bagration and the lunettes named from him, while Poniatowski was to turn the extreme left of the Russians by Utitsa; the battle once well engaged, Prince Eugene was to pass the Kologa, and attack the Rayevski lunette. Thus the whole front actually attacked did not exceed in length 5,000 yards, which allowed 26 men to each yard of front, an unprecedented depth of order of battle, which accounts for the terrible losses of the Russians by artillery fire. About daybreak Poniatowski advanced against Utitsa, and took it, but his opponent, Tutchkoff, again expelled him; subsequently, Tutchkoff having had to send a division to the support of Bagration, the Poles retook the village. At 6 o'clock Davoust attacked the proper left of the Bagration intrenchments. Under a heavy fire from 12-pounders, to which he could oppose only 3 and 4-pounders, he advanced. Half an hour later, Ney attacked the proper right of these lunettes. They were taken and retaken, and a hot and undecided fight followed.—Bagration, however, well observed the great force brought against him, with their powerful reserves, and the French guard in the background. There could be no mistake about the real point of attack. He accordingly called together what troops he could, sending for a division of Rayevski's corps, for another of Tutchkoff's corps, for guards and grenadiers from the army reserve, and requesting Barclay to despatch the whole corps of Baggehufvud. These reinforcements, amounting to more than 80,000 men, were sent at once; from the army reserve alone, he received 17 battalions of guards and grenadiers, and 2 12-pound batteries. They could not, however, be made available on the spot before 10 o'clock, and before this hour Davoust and Ney made their second attack against the intrenchments, and took them, driving the Russians over the Semionovskoye ravine. Bagration sent his cuirassiers forward; an irregular struggle of great violence

followed, the Russians regaining ground as their reinforcements arrived, but again driven beyond the ravine as soon as Davoust engaged his reserve division. The losses on both sides were immense; almost all the general officers were killed or wounded, and Bagration himself was mortally hit. Kutusoff now at last took some part in the battle, sending Dokhturoff to take the command of the left, and his own chief of the staff, Toll, to superintend the arrangements for defence on the spot. A little after 10 the 17 battalions of guards and grenadiers, and the division of Vasilitchikoff, arrived at Semionovskoye; the corps of Baggehufvud was divided, one division being sent to Rayevski, another to Tutchkoff, and the cavalry to the right. The French, in the mean time, continued their attacks; the Westphalian division advanced in the wood toward the head of the ravine, while Gen. Friant passed this ravine, without, however, being able to establish himself there. The Russians now were reinforced ($\frac{1}{4}$ past 10) by the cuirassiers of Borodino from the army reserve, and a portion of Korff's cavalry; but they were too much shattered to proceed to an attack, and about the same time the French were preparing a vast cavalry charge. On the Russian centre Eugene Beauharnais had taken Borodino at 6 in the morning, and passed over the Kologa, driving back the enemy; but he soon returned, and again crossed the river higher up in order to proceed, with the Italian guards, the division of Broussier (Italians), Gerard, Morand, and Grouchy's cavalry, to the attack on Rayevski, and the redoubt bearing his name. Borodino remained occupied. The passage of Beauharnais's troops caused delay; his attack could not begin much before 10 o'clock. The Rayevski redoubt was occupied by the division Paskiewitch, supported on its left by Vasilitchikoff, and having Dokhturoff's corps for a reserve. By 11 o'clock, the redoubt was taken by the French, and the Paskiewitch division completely scattered, and driven from the field of battle. But Vasilitchikoff and Dokhturoff retook the redoubt; the division of Prince Eugene of Würtemberg arrived in time, and now Barclay ordered the corps of Ostermann to take position to the rear as a fresh reserve. With this corps the last intact body of Russian infantry was brought within range; there remained now, as a reserve, only 6 battalions of the guard. Eugene Beauharnais, about 12 o'clock, was just going to attack the Rayevski redoubt a second time, when Russian cavalry appeared on the left bank of the Kologa. The attack was suspended, and troops were sent to meet them. But the Russians could neither take Borodino, nor pass the marshy bottom of the Voyna ravine, and had to retreat by Zodoek, without any other result than having to some extent crossed Napoleon's intentions.—In the mean time, Ney and Davoust, posted on the Bagration hill, had maintained a hot fire across the Semionovskoye ravine on the Russian masses. All at once

the French cavalry began to move. To the right of Semionovskoye, Nansouty charged the Russian infantry with complete success, until Sievas's cavalry took him in flank and drove him back. To the left, Latour-Maubourg's 8,000 horse advanced in 2 columns; the first, headed by 2 regiments of Saxon cuirassiers, rode twice over 8 Russian grenadier battalions just forming square, but they were also taken in flank by Russian cavalry; a Polish cuirassier regiment completed the destruction of the Russian grenadiers, but they too were driven back to the ravine, where the second column, 2 regiments of Westphalian cuirassiers, and 1 of Polish lancers, repelled the Russians. The ground thus being secured, the infantry of Ney and Davoust passed the ravine. Friant occupied Semionovskoye, and the remainder of the Russians who had fought here, grenadiers, guards, and line, were finally driven back and their defeat completed by the French cavalry. They fled in small disorderly bands toward Mozhaisk, and could only be collected late at night; the 3 regiments of guards alone preserved a little order. Thus the French right, after defeating the Russian left, occupied a position directly in rear of the Russian centre as early as 12 o'clock, and then it was that Davoust and Ney implored Napoleon to act up to his own system of tactics, and complete the victory, by launching the guards by Semionovskoye on the Russian rear. Napoleon, however, refused, and Ney and Davoust, themselves dreadfully shattered, did not venture to advance without reinforcements.—On the Russian side, after Eugene Beauharnais had desisted from the attack on the Rayevski redoubt, Eugene of Wurtemberg was sent to Semionovskoye, and Ostermann, too, had to change front in that direction so as to cover the rear of the Rayevski hill toward Semionovskoye. When Sorbier, the French chief of artillery, saw these fresh troops, he sent for 86 12-pounders from the artillery of the guard, and formed a battery of 85 guns in front of Semionovskoye. While these guns battered the Russian masses, Murat drew forward the hitherto intact cavalry of Montbrun and the Polish lancers. They surprised Ostermann's troops in the act of deploying, and brought them into great danger, until the cavalry of Kreutz repelled the French horse. The Russian infantry continued to suffer from the artillery fire; but neither party ventured to advance. It was now about 2 o'clock, and Eugene Beauharnais, reassured as to the hostile cavalry on his left, again attacked the Rayevski redoubt. While the infantry attacked it in front, cavalry was sent from Semionovskoye to its rear. After a hard struggle, it remained in the hands of the French; and a little before 3 o'clock the Russians retreated. A general cannonade from both sides followed, but the active fighting was over. Napoleon still refused to launch his guard, and the Russians were allowed to retreat as they liked. The Russians had all their

troops engaged, excepting the 2 first regiments of the guards, and even these lost by artillery fire 17 officers and 800 men. Their total loss was 52,000 men, beside slightly wounded and scattered men who soon found their way back; but on the day after the battle their army counted only 52,000 men. The French had all their troops engaged, with the exception of the guards (14,000 infantry, 5,000 cavalry and artillery); they thus beat a decidedly superior number. They were, beside, inferior in artillery, having mostly 8 and 4-pounders, while $\frac{1}{2}$ of the Russian guns were 12-pounders, and the rest 6-pounders. The French loss was 80,000 men; they took 40 guns, and only about 1,000 prisoners. If Napoleon had launched his guard, the destruction of the Russian army, according to Gen. Toll, would have been certain. He did not, however, risk this last reserve, the nucleus and mainstay of his army, and thus, perhaps, missed the chance of having peace concluded in Moscow.—The above account, in such of its details as are at variance with those commonly received, is mainly based upon the "Memoirs of Gen. Toll," whom we have mentioned as Kutusoff's chief of the staff. This book contains the best Russian account of the battle, and is indispensable for its correct appreciation.

BORON, or **BORUM**, a metalloid substance discovered by Sir H. Davy, in 1807, by exposing boracic acid to the action of a powerful galvanic battery. Gay-Lussac and Thénard the succeeding year obtained it in larger quantities by heating boracic acid with potassium. It occurs in nature only in combination with oxygen in the form of boracic acid, either free or combined. It is obtained in the form of a powder, which is of dark olive-brown color, infusible and not volatilized at a white heat. Heated to 600° in the open air it takes fire, and, absorbing oxygen, is converted into boracic acid. It possesses neither taste nor smell, and is a non-conductor of electricity. Its specific gravity is about 2. Mixed with nitrate of potash and heated, it detonates with violence. Its chemical equivalent is 11, and its symbol B. It is not applied to any useful purpose. By means of the new metal aluminum, boron has been recently obtained by Wöhler and Sainte Claire Deville in a crystallized state, and in a form they call graphitoid, from its resemblance to graphite. In the form previously known it is designated as amorphous. The results of their investigations are very interesting from the entirely new properties they discover in this substance. The crystallized boron they find to be the most unalterable of all simple bodies. No acids, pure or mixed, have any effect upon it; nor is it affected by boiling concentrated caustic soda, or nitrate of potash. It is slowly dissolved by monohydrated soda and carbonate of soda at a red heat. It is infusible before the oxyhydrogen blowpipe, and is not oxidized when strongly heated. By chlorine it is acted upon with energy, becoming red hot in an atmosphere of it,

and converted into chloride of boron. Its crystalline form is not ascertained. It is brilliant and highly refractive like the diamond, and but little inferior to it in hardness. Like this, it is expected to be obtained in colorless crystals. These are now transparent, of garnet-red and heavy yellow colors, due probably to foreign coloring matters. It easily scratches corundum. The graphitoid variety is obtained in spangles of reddish color, quite opaque and sometimes of hexagonal form. It is deposited from a solution of boride of aluminum in hydrochloric acid. The preparation of the crystallized boron is thus described in a late number of the *Comptes rendus*: "Eighty grammes of aluminum in large fragments are fused with 100 grammes of fragments of fused boracic acid. The charcoal crucible is luted into a good black-lead crucible, and the whole put into a blast-furnace capable of easily fusing pure nickel. The temperature is kept at its maximum for about 5 hours, care being taken to clear the bars of all ashes. When cold, the crucible is broken, and two distinct strata are found in it—one vitreous, composed of boracic acid and alumina, and the other metallic and cavernous, of an iron-gray color, beset with little crystals of boron; it is aluminum impregnated throughout with crystallized boron. All the metallic portion is treated with a moderately concentrated boiling solution of soda, which dissolves the aluminum; then with boiling muriatic acid, which removes the iron; and lastly, with a mixture of hydrofluoric and nitric acids to extract the traces of silicium which the soda may have left mixed with the boron. The boron is not pure, however; it contains laminae of aluminum, which may be extracted mechanically, but cannot be separated from the boron by any chemical process."

BOROUGH. The origin of this term is uncertain. By some etymologists it is derived from *burgh* (Sax.), *burgus* (Lat.), a walled town, and thence applied to any association of families in a neighborhood, for the purpose of mutual protection. By others, it is deduced from *borgh* or *borhæ* (Sax.), pledge, referring to the civil division into tithings or decennaries, hundreds, &c., in which the inhabitants composing the tithing or hundred were pledges for the good conduct of each other. It is probable that in an early period when great disorder prevailed, protection was the principal object of the vicinage of houses which was denominated a borough. The term *villa*, from which is derived the modern *village*, originally signified a private country residence, but was afterward applied to a number of buildings placed near each other for the common safety of the inhabitants. It appears from "Domesday Book" that there were 82 boroughs in England, including cities, at the time of the Norman conquest. Though differing as to the extent of their franchises and mode of government, they were alike in two respects: 1, in having a fair or market; 2, they had a borough court independent of the

hundred. A 3d particular afterward became the distinctive franchise of boroughs, viz., the right of sending burgesses to parliament. The original object of mutual defence was merged in another, viz., privileges of trade; and not long after the conquest the guild, which was an association of persons in a particular trade, became so intermingled with the original constitution of boroughs that it is difficult to distinguish the respective franchises belonging to each, and the guild merchant, which was a kind of incorporation or licensed association of all the trades, became substantially the borough, or at least became possessed of its franchises, government, and name. Membership of the guild thus became the principal mode of obtaining the freedom of the borough. The number of burgesses was by no means co-extensive with that of the inhabitants; in fact, the boroughs were generally oligarchies, especially those which were created by charters after the conquest. The government was in many instances engrossed by a self-constituted body as the guild merchant, and in some cases even by a particular guild. Borough franchises were derived from charter or prescription (which was founded upon a supposed charter), and consisted at first of particular privileges, as that of a fair or market, of having a court, exemption from toll, and the like. Charters of incorporation were first granted in the reign of Henry VI., although the ancient boroughs had in fact used the privileges peculiar to corporations, viz., of governing themselves, and of holding property in common. But from the period above mentioned, the history of boroughs belongs to the subject of municipal corporations, with the exception of parliamentary franchise. Before the act of 1831, known as the act for parliamentary reform, there were 171 boroughs in England, represented by 339 burgesses; from Scotland there were 15 members for boroughs, and from Ireland 36. By that act 56 English boroughs were wholly disfranchised, 30 were deprived of 1 member each, and the right was given to 22 boroughs, which were before unrepresented, of returning 2 members each, and to 19 boroughs of returning 1 member each. The right of voting was also extended from a small privileged class to the citizens at large having certain qualifications. The whole number of representatives from boroughs in the English parliament, is now 337 from England and Wales, 23 from Scotland, and 39 from Ireland, being nearly the same numerically as before, but having very different constituencies. In the United States the term borough is applied to an incorporated village or town, but not to a city. In England it includes cities as well as villages, though in some old statutes the 3 terms, city, borough, and village, are used distinctively.

BOROUGHBRIDGE, an English market-town, in the parish of Aldborough, and the west riding of Yorkshire, 206 miles N. N. W. of London; pop. 1,095. In old times it was a seat

of the druids, and there still remain in its vicinity 8 rude obelisks or pillars, called the devil's arrows, which were the goals in ancient British races.

BOROVSK, a district in the government of Kalooga, in European Russia; pop. 59,600.—A city on the banks of the river Protva, pop. 7,800. Lint, hemp, and leather, are the chief articles of trade; here are also some manufactories of sail-cloth. Near this city, in 1610, the prince and boyard, Michel Volkonsky, valiantly resisted the Poles and the troops of the pretender Dimitri. Within a short distance of the city is one of the wealthiest convents in Russia, called Pavnoutiev-Borovskii, which was founded in 1444. The district is covered with forests, and is famous throughout Russia for its garlic and onions.

BOROWLASKI, Count, a celebrated Polish dwarf, born in 1739, died Sept. 5, 1837. He was less than 3 feet high, but perfectly symmetrical. Lockhart ("Life of Scott") says: "After realizing some money as an itinerant object of exhibition, he settled, married, and died at Durham." Scott says, in one of his letters, that the count's wife used to set him up upon the chimney-piece, when he displeased her. The count spoke several languages, and was well informed and witty.

BORRELISTS, the followers of one Adam Borrel, who was born in Zealand, 1603, and died in 1667. He insisted upon the exclusive authority of the Scriptures, and wrote a work entitled *Ad legem, et testimonium*, which set aside every thing as essential to man's salvation, beyond the letter of Scripture. His followers rallied around him in Amsterdam, in 1645, where he held meetings, and promulgated his views. They entirely rejected all the sacraments of the church.

BORRI (**BORRO**, **BUREHUS**, **BURREHI**), **GRUSSEPPE FRANCESCO**, a religious adventurer, born in Milan May 4, 1627, died in Rome, in the castle of St. Angelo, Aug. 10, 1695. He was educated in the college of the Jesuits at Rome, and became engaged in the search for the philosopher's stone. In Rome he professed to become very much shocked with the want of morality, and presently claimed to have received divine directions how to conduct a reformation. He taught the actual presence of the Holy Ghost in the bread of the eucharist, and that the third person in the Trinity had been incarnated in the Virgin Mary. He extorted large sums of money from his followers, and even ingratiated himself into the favor of several royal personages, among whom were Christina, queen of Sweden, and the king of Denmark, by his pretended discovery of the philosopher's stone. At length he fled to Strasbourg, in 1660, then to Amsterdam, and finally to Denmark. On attempting to flee from there to Hungary, he was arrested as a spy, and brought before the king, who delivered him to the nuncio of the pope on a requisition for him as an excommunicated heretic. He was sentenced to perpetual imprisonment, and died in prison.

BORROMEAN ISLANDS, a group of 6 islands belonging to the Sardinian province Pallanza, in the entrance of the gulf of Tosa, an arm of Lago Maggiore. They have their name from the Borromeo family, in whose possession they have been for 600 years without alienation. In the 17th century they were enriched by soil carried from the continent, and adorned with productions of every kind congenial to the climate. The principal one in size is Isola Madre, being about 8 miles in circumference, and the most northerly of the group. The most highly ornamented and productive is the Isola Bella, which was formerly a barren rock. It now abounds in the most interesting tropical plants. The Isola dei Pescatori contains a community of fishermen, 350 in number.

BORROMEO, **CARLO**, count, a saint and cardinal of the Roman church, born at Arona on Lago Maggiore, Oct. 2, 1538, died Nov. 4, 1584. In the university of Pavia, to which he was sent at an early age, he was marked as a model of truthfulness, disinterestedness, and purity. It was said of him, as of Gregory and Basil in Athens, that he knew but two streets in the city, that which led to the school, and that which led to the church. Called home at the age of 20, on the death of his father, to take charge of the family estates, and to dispose of the revenues of 2 rich abbeys which his uncles had given him, he proved himself incorruptible and sagacious in business. At the age of 22, he was appointed, by his uncle, Pope Pius IV., archbishop of Milan, grand penitentiary and president of the Roman council. The force of his character overruled the objection of his youth, and the 5 years of his administration in Rome justified the wisdom of his appointment. He vigorously carried through reforms in manners and in policy, discouraging bigamy, removing the tax on food, hearing the complaints of the suffering, and awakening new interest in the services of the church. He showed, in his manner of life, how a man might be a magistrate, a scholar, and a saint, without avoiding general society, or courting monastic seclusion. While he favored the various religious orders, he did not imitate their cloistral customs. His palace was an academy of letters, to which the wits and scholars of the city resorted, and here he was accustomed to read, with a choice circle of friends, the ancient classics, especially the *Enchiridion* of Epictetus. Dividing his time by method, he had leisure for study, leisure for conversation, leisure for prayer, while he wrote with his own hand his official despatches and the decisions of his court. Not the least service which he rendered to the Catholic religion at this period of his life, was his agency in finishing the long work of the council of Trent, and providing for the church a permanent symbol of faith. This work completed, he began to think more of the needs of that religious charge to which he had been appointed. It seemed to him wrong that

the overseer of a diocese should be so long an absentee, and that an archbishop should not be ever a priest of the altar. The worldly prospects held out to him on the death of his brother, when the succession of a knightly house seemed to require him to resign his dignities and to marry, and even the aged pope urged him to that change, could not shake his resolution to take ordination vows, and to go to Milan. His journey of 8 weeks, from Rome thither, was a triumphal progress. Nobles and peasants, monks and women and children, came out to greet one whose countenance and character, not less than his official sanctity, gave them benediction. On Sept. 23, 1565, the day of his entry into the city, the windows were garlanded, arches were thrown across the streets, and the grateful people shouted that their prayers had been heard, and Ambrose had come again to Milan. For 80 years no bishop had resided there. The enthusiasm rose to its height when from the pulpit of the cathedral the young archbishop preached to them, taking for his text: "With a great desire have I desired to eat the passover with you." In the fervor of their gratitude, the people could not notice (what the critics complained of) that the speech of this new preacher was awkward and halting; its very simplicity seemed to them to be dictated by a special inspiration. He was soon summoned back to Rome, to wait at the bedside of the dying pontiff. From closing the eyes of one pope, he passed to the conclave where another was to be chosen; and there we behold him supporting for the vacant place the hereditary enemy of the race of Medici, sacrificing all family pride and personal ambition, and thwarting the intrigues of princes, that he might give to the church the ablest ruler. The only favor which he asked from Pius V. was permission to return to Milan, and to dwell among his own people. His visit to Milan had shown him that a great work of reform was needed there. Commencing with himself, he began to practise abstinence from all luxuries, frequent fasting, penitential discipline, manual labor; and his name became a proverb in Milan for self-denial. Abstinence was familiarly called "Cardinal Borromeo's remedy." Next to this personal reform, came reform in the order of his household. Work was the rule there; all had some duty to do, and there were no sinecures. Mutual help, modesty in dress, regularity in study, and constancy in prayer, were the elements of his domestic discipline. He carried this idea of a Christian household with him in his parochial visits and episcopal journeys. It was the idea of well-ordered convent life; yet he was pained to find that in many convents in his diocese, a very different course prevailed. And not only did he investigate the methods of village curates, visiting every hamlet where there was a school and a church, even in the wildest and most secluded recesses of the province, examining every altar, every sacristy, all the furniture

of the church, and the homes, too, of the curates, with whom he invariably lodged, but he gave particular scrutiny to monastic institutions. His task of reform in these was not so easy as in the parishes. While the honor of his presence, the earnestness of his preaching, and the loveliness of his spirit captivated the inferior clergy and the men of the humbler ranks, the monks were bold, in some instances, to resist and defy him. The order of the Humiliati especially, in which a handful of 170 men could squander the revenues of more than 90 convents, took every means to defeat his reforms. They ridiculed his canons, bribed his officers, circulated slanders about his character, barred their doors against his visits, and when all other measures failed, attempted to murder him. A renegade priest was hired for that work, and while the cardinal was on his knees in the chapel, a blunderbus was discharged, the ball of which struck his robe without penetrating the body, and fell leaving only a trifling bruise. It was the second time that the shot of an assassin had failed, and the people saw now, in his marvellous escape, the same special favor which had before protected him. The murderers were arrested, and the cardinal's merciful interposition could not this time save them from punishment. The order of the Humiliati was abolished, its revenues distributed to the poor; and the other convents, after this salutary warning, hastened to conform to his decrees. Even the nuns, after a time, acquiesced in a discipline which required them to labor as well as pray. The most important reform which he inaugurated was in the system of education. The number of schools and seminaries which he founded is almost incredible: 740 schools, with 3,040 teachers, and 40,098 scholars, are recorded. It was his theory that every child belonged to the church, and that the priest had especial care of the souls of children. And while he in no degree abated the splendor of the metropolitan ritual, and left the choir of the cathedral that marvel of magnificence which it still remains, he would have its institutions of religious training only the centre of a system which should penetrate the remotest parts of his diocese, so that the poorest boy in the mountain districts might reach, in regular course, the highest doctor's place in the metropolitan chapter. Neglect of teaching was to him a graver offence than neglect of prayer, when he took account of his priesthood. Hardly less thorough was his reform in criminal discipline. He found Milan the most turbulent, profligate, pauperized, and ill-governed city in Europe. When he died, it had become a proverb for neatness, safety, and tranquillity. He would have criminals treated as unfortunates more than as outcasts—as morally diseased, more than hopelessly vicious. Punishment should be proportioned to the offence; the penitent should be subjects of mercy, and all should have the influences of religion to move and renew their hearts. He appointed Christian visitors to the

prisons, and often accompanied these men on their daily rounds. He established a religious police to watch the beginnings of crime and to save from the consequences of a first offence. He made of the prisons only another kind of hospitals, and he changed that tyrannical magistracy who at first hated and resisted him, into coadjutors and philanthropists. His own charity was unbounded. It is said that he distributed to the poor, in a single day, 40,000 crowns, the price of a principality in Naples. The gifts and legacies which from time to time came to him, were dispensed in the same way. In 20 years, one of the richest prelates in Europe made himself, by incessant sacrifices, almost as poor as a Franciscan friar. Yet he was judicious in his charities. Though he turned no suppliant coldly away, he discouraged beggary. And the poor, indeed, had now the gospel preached to them. The same voice which spoke from the cathedral pulpit was heard in the villages of the high Alps, proclaiming the doctrine of brotherly love and God's compassion to the sinful. He proved to the Protestants of Switzerland that their notion of a Roman bishop was not wholly just; and where he had spoken, there were no more executions for witchcraft.—The passage in the life of Cardinal Borromeo, which has given him the largest fame, is his conduct during the great plague of Milan, in 1576. The genius of Manzoni has illustrated, but not exaggerated, the noble endurance and valor of St. Charles in that time of terror. Predicting calamity from the foolish wantonness which marked the sports of the carnival in that year, he was not disposed to flee, like the rest, when the calamity came. No entreaties could induce him to leave his suffering flock. He headed, in the garb of penance, the customary procession of expiation. He preached every day, and fasted continually. He entered the most squalid abodes of the infected districts, carrying the holy viaticum, and composed with his own hands, in the wards of the hospitals, the limbs of the dying. He organized a heroic band of priests to take the duties of the fugitive magistrates. He opened the churches and the episcopal mansions to the frightened people, sold his furniture and his plate to buy bread for them, made by his will the hospitals of the city heir to his estate, if his life should be lost, and even gave up his own straw-bed, and slept upon a board. His strength seemed to increase as by miracle. He went everywhere by day and night, on foot and on horseback, within and without the city, praying the rich to give and to lend, and to open their houses to the poor. The horrors of famine, added to the horrors of pestilence, only quickened his courage. Even when all seemed lost, he did not despair; and after months of misery and devastation, the scourge departed from the city, and in the bitterness of their sorrow, the people could rejoice that their chief pastor had been spared to them; 17,000, 120 of them ecclesiastics, had died of the plague.

The excessive labors of St. Charles wore upon a constitution naturally feeble, and it was evident that his self-sacrificing life would be too short for his broad designs. The journeys which he made to Turin and Rome hastened his weakness, and the people were now called to lament his loss. And it was such a lament as had been given to no prince or hero within the memory of man. At the first alarm that their bishop was dying, a cry went up in the streets, which reached to every house and convent and chamber. Some ran to the churches to pray. Some waited at the gate of the palace for instant tidings. All Italy was mourner for this good man. The funeral solemnities were broken by the bursts of grief which could not be restrained; and when, from the pulpit of the cathedral, the holy life and the Christian death of this devoted servant of God were set before the multitude, all felt that their bishop was indeed a saint and a martyr. His tomb, beneath the high altar, became at once a shrine, to which the feet of pilgrims from all parts were directed, and to which the princes of Europe sent their offerings; and, in 1610, 72 years from the date of his birth, the name of Borromeo was associated with those whose intercession the Catholic faithful supplicate. The biography of St. Charles has been many times written, best by Godeau, bishop of Venice (Paris, 2 vols. 12mc, 1748), by Touron (Paris, 1761, 8 vols., 12mo), and by the Italian Guissano (1751). A new life has been written recently by E. H. Thompson (London, 1858). His works, which were almost entirely of a practical and official character, sermons, letters, decrees of councils, are published in their most complete form in the Milan edition of 1747 (5 vols. folio). A selected edition of his letters was published in Paris, in 1762, in octavo. But large numbers still remain unpublished in the archives of the Ambrosian and Vatican libraries and of the Jesuits' house in Rome. As a writer, St. Charles was not remarkable. His works help to illustrate, however, the Roman Catholic creed in its final development. His statue was erected near Arona, and his festival is celebrated Nov. 4.

BORROMEIO, FEDERICO, count, cardinal and archbishop of Milan, nephew of St. Charles, born at Milan in 1568, died Sept. 22, 1681. He founded the Ambrosian library at Milan in 1609, and devoted to it most of his fortune. He sent Oligati to Germany, the Netherlands, and France; Ferrari to Spain, Salmaci to Greece, Father Michael, a Maronite priest, to Syria, to collect MSS. for it. He added to it a printing establishment, and founded academies, schools, and charitable institutions.

BORROMEIO, ST., SISTERHOOD OF, a religious association founded in 1652 by the abbé of Estival, for educational and charitable purposes, has its chief organization at Nancy, in Lorraine.—A religious association of the same name was founded in Bonn, in 1844, for the distribution of Roman Catholic publications, and had, in

1851, 15,000 members, and an annual income of \$15,000.

BORROMINI, FRANCESCO, an Italian architect, born at Bissone, in 1599, died by his own hand, in 1667. He was a pupil of Bernini, by whom he was employed on various parts of St. Peter's, and executed a number of important works at Rome and elsewhere, including palaces, churches, and other public buildings.

BORROW, GEORGE, an English writer on gypsy history, born in the headquarters of the gypsies who roam about in the vicinity of London, near the beautiful little village of Norwich, Feb. 1803. The affinities which from his earliest childhood existed between his own pliable nature and the vagabond life of the Norwich gypsies, ripened into still more decided sympathies by the contact into which he was brought, while camping about with the regiment of which his father was military teacher, with other branches of the gypsy community, which, at the beginning of this century, infested many English counties. Mr. Borrow had a decided talent for the acquisition and the colloquial use of languages; and his acquaintance with the learned William Taylor of Norwich, the author of the "Survey of German Poetry," and with other eminent scholars, contributed to give him a taste for knowledge, which he gratified by his studies at Edinburgh, and subsequently by his travels, whose principal object was to master, in addition to the traditions and manners which he had gathered from his Norwich gypsy friends, all the linguistic, social, and general characteristics of the Spanish gypsies or gitanos. For the better attainment of this object, he passed considerable time in Spain; and the work which he published in 1841, "The Zineali, or an Account of the Gypsies of Spain, with an original Collection of their Songs and Poetry, and a copious Dictionary of their Language," gave evidence of the success of his labors, and also became popular by the picturesqueness of its style. His next work, "The Bible in Spain," &c. (Lond., 8 vols., 1843), gave a humorous account of his adventures and imprisonment while attempting to distribute the Bible in that country, as agent of the London Bible society. In 1851 he brought out a semi-autobiographical, semi-fictional work entitled "Lavengro, the Scholar and the Priest," which failed to produce the same impression as his previous works. In 1857 he published "Roman Rye," a continuation of "Lavengro." We have also to mention a small volume of "Translations of Northern Poetry," and a "Translation of the Gospel of St Luke into the Spanish Gypsy Tongue:" *El Evangelio segun Lucas, traducido al Romani o dialecto de los Gitanos de España*.

BORROWSTOUNNESS, or BOWNESS, a barony and one of the oldest seaports of Scotland, pop. in 1851, 2,645, in the county of Linlithgow, on the firth of Forth. It formerly had considerable trade, but its commerce is now confined principally to the Baltic, though it sends a few ships every year on whaling voyages. From

the extensive manufactories in this town, 30,000 bushels of salt are annually exported. In the vicinity are valuable coal mines, some of which have been worked for centuries, and extend under the firth of Forth to the distance of a mile—nearly reaching the mines of Culross on the opposite side. The most interesting objects in the parish are a part of the Roman wall of Antonine, and Kinneil house, for many years the residence of Dugald Stewart.

BORTHWICK, PETER, a British tory politician, born in Scotland, in 1804, died in Dec. 1852. In 1832 he was an unsuccessful candidate for the parliamentary borough of Evesham. Soon after, being accidentally present at an anti-slavery meeting in London, he spoke in favor of the gradual, instead of the immediate, emancipation of slaves in the British colonies, and was immediately employed, by what was called "the West India interest," as their advocate. For months he appeared in this capacity, in various parts of Great Britain, his most constant and able opponent being Mr. George Thompson. Mr. Borthwick became representative of Evesham in 1834, for which he sat until 1847. After he left parliament, he became manager of the "Morning Post" newspaper, in which capacity he continued until his death.

BORTHWICK CASTLE, a strong fortress in the parish of Borthwick, Scotland. It was built in the year 1480, and was famous in the civil wars of the sixteenth and seventeenth centuries. Dr. Robertson, the historian, was born in the personage of Borthwick.

BORY DE SAINT VINCENT, JEAN BAPTISTE GEORGE MARIE, a French naturalist, born at Agen in 1780, died in Paris Dec. 22 or 23, 1846. In his 15th year he read 2 remarkable papers before the society of natural history at Bordeaux. In 1800 he accompanied, as naturalist, the expedition of Capt. Baudin. Being immediately after appointed to an office on the isle of Bourbon, he made a magnificent map of that island, visited St. Helena, and after his return to France published, in 1806-'4, an "Essay on the Fortunate Isles and the Ancient Atlantis," and a narrative of a "Voyage among the African Islands." Under the empire he served in the staff of Davoust in the Austerlitz campaign, and with Ney and Soult in the Spanish campaigns. He was proscribed from 1815 to 1820, lived near the quarries of Maestricht, studied those immense crypts, and published an account of them in a work entitled a "Subterranean Journey." He visited Berlin, Magdeburg, and Aix la Chapelle, and established himself at Brussels, where, in connection with 2 other savants, he published the "Annals of the Physical Sciences." In 1829 he directed the scientific expedition to the Morea, and in 1830 was appointed chief of the historical bureau in the department of war. Beside numerous short papers published in periodicals, he wrote a work on the geography of Spain, a history of microscopic animals, and many articles in the "Classical Dictionary of Natural History."

BORYSTHENES. See **DNIEPER**.

BOS, LAMBERT, a Dutch philologist, born at Workum, in Friesland, Nov. 23, 1670, died Jan. 6, 1717. He was instructed by his father in Greek and Latin. Vitringa, the distinguished oriental scholar, was professor at Franeker, and thither young Bos went to pursue his philological studies. Not long after he was chosen Greek professor in that university. He is best known by his work entitled *Ellipses Græcæ* (1702), though he was the author of several others, among which may be mentioned an edition of the Septuagint and *Animadversiones ad Scriptores Græcos*.

BOS, BOSCH or BOSCO, HIERONYMUS, a Dutch painter and engraver, born at Bois le Duc about 1470, died in 1530. His fancy partook of the grotesque, Gothic character of the middle ages, and his pictures are ingenious representations of devils, spectres, and incantations. Some of his works, however, representing scriptural scenes, possess greater dignity. His engravings resemble his paintings, and have become very scarce.

BOSCO, LOUIS AUGUSTIN GUILLAUME, French naturalist, born in Paris, Jan. 29, 1759, died there July 10, 1838. Employed in various public offices until 1793, his political sympathies made him obnoxious to the terrorists, and concealing himself in the forest of Montmorency, he resumed there, under the greatest difficulties, his favorite science of botany, having already previously gained some distinction as a naturalist. On returning to Paris after the fall of Robespierre he was sent in 1796 as French consul to the United States; but, not recognized in this position by the American authorities, he explored the country for scientific purposes. In 1799 he was appointed chief of the administration of prisons, but lost this office on the 18th Brumaire. Applying himself thenceforward to literary labors, he made numerous contributions to natural science. His *Histoire naturelle des coquilles* (5 vols. 2d edition, Paris, 1824), and *Histoire des vers et des crustacés* (2 vols. 2d edition, Paris, 1829), and his studies on the vines of France, are his principal achievements. He was made a member of the academy of sciences, of the central agricultural society, and finally, after having been inspector of the gardens at Versailles, he became professor at the *jardin des plantes* at Paris. He was a zealous worker in the realms of science, and, at the same time, a warm and generous friend. Roland, under whose administration he had served, and who perished with his wife on the guillotine, made him guardian of their daughter. Bosco published memoirs of the celebrated Madame Roland, and succeeded in obtaining for Mlle. Roland the confiscated property of her unfortunate parents.

BOSCAN ALMOGAVER, JUAN, a Spanish poet, born in Barcelona toward the end of the 15th century, died in 1543. He served in the armies, and figured at the court of Charles V. He had published several poems, when he met at Granada the Venetian ambassador and emi-

nent scholar, Andrea Navagiero, who made him acquainted with the beauties of Italian literature. He now wrote somewhat in imitation of Italian poets, and succeeded so far as to introduce the Italian 11-syllable and iambic versification; the sonnet and *canzone*, as settled by Petrarch; Dante's *terza rima*, and Boccaccio's and Ariosto's flowing octaves. Of his works, which were published at Barcelona by his widow immediately after his death, and which are divided into 4 books, the last book, entitled the "Allegory," is the best. His longest work was a translation from the Italian of Castiglione's "Courtier," according to Dr. Johnson, the best book on good breeding that was ever written.

BOSCAWEN, EDWARD, a British admiral, third son of Hugh Boscawen, the first Lord Falmouth, born in Cornwall, Aug. 19, 1711, died near Guildford, Jan. 10, 1761. His mother was the daughter of a sister of the great duke of Marlborough. Entering the navy at an early age, he was promoted to the rank of captain in 1737. In 1740 he displayed great intrepidity as a volunteer under Admiral Vernon at the taking of Puerto Bello, and the next year, at the siege of Carthagena, had command of a small party of seamen, who resolutely stormed a battery of 15 24-pounders, while exposed to the fire of another fort. On his return to England he was elected to parliament for the borough of Truro, which he continued to represent until his death. In 1744, when in command of the Dreadnought, of 60 guns, he captured a French frigate in the channel, and was soon after promoted to the command-in-chief of all the armed cruisers employed by government. In 1747 he was a captain in Anson's fleet, and signaled his bravery in the engagement with the French fleet under Le Jonquière off Cape Finisterre, where he was wounded in the shoulder by a musket ball. Promoted successively to the ranks of rear-admiral of the blue and of the white, he was in 1748 intrusted with the command of all the forces, naval and military, destined for the East Indies. He made an unsuccessful attempt upon Pondicherry, and returned to England on receiving news of the peace. In 1751 he became lord of the admiralty and an elder brother of the Trinity house, and soon after the renewal of hostilities with France in 1755, was made successively vice-admiral of the blue and of the white. He was despatched to cruise on the shores of Newfoundland, for the purpose of intercepting a French squadron, which, however, escaped from him by passing through the straits of Belleisle; but he fell in with and captured the *Aloide* and the *Lys*, of 64 guns each, taking prisoner, for the third time, M. de Hoquart, the commander of the former. Advanced to the rank of admiral of the blue, in 1758, he was appointed commander-in-chief of the naval forces which took part at the reduction of Louisburg and of the whole island of Cape Breton, and for his services received the thanks of the house of commons, and was nominated a privy councillor. Being appointed, in 1759, to

the command of a squadron in the Mediterranean, he pursued and engaged the French fleet off Cape Lagos, where he captured 8 of its largest ships, burned 2 others, and totally ruined the schemes of the French court for an attack on the British dominions in their most vital part. On his return to Spithead with his prizes, and 2,000 prisoners, he received the freedom of the city of Edinburgh, and was made governor of the marine forces, with a salary of £3,000 a year. His last services were in 1760, in sharing with Sir Edward Hawke the arduous duty of watching the remaining ships of Conflans' defeated fleet in the ports of the bay of Biscay. Admiral Boscawen was one of the bravest of seamen, and was styled by Horace Walpole the most obstinate of an obstinate family. Lord Chatham thus eulogized him: "When I apply to other officers respecting any expedition I may chance to project, they always raise difficulties; Boscawen always finds expedients."

BOSCOBEL, an extra-parochial liberty of England. After the battle of Worcester, Sept. 8, 1651, King Charles II. took refuge in the manor-house of this place. The next day he concealed himself in a thick oak tree which stood near by, and from an acorn of this tree grew the present "royal oak" at Boscobel.

BOSCOVICH, **RUGIERO GIUSEPPE**, an Italian mathematician and physicist, born at Ragusa, May 18, 1711, died in Milan, Feb. 12, 1787. Educated by the Jesuits, he was appointed professor of mathematics in their college at Rome, and distinguished himself by publishing able dissertations on a great variety of astronomical, physical, and mathematical subjects; also by editing several philosophical poems. He was frequently called upon as umpire in national disputes, and thus visited many states of Europe, including England, being everywhere received with attention. After his return from England, he was appointed professor of mathematics at Pavia, and 6 years afterward professor of astronomy and optics at Milan. On the abolition of the order of Jesuits, he took refuge in Paris, and received a pension from Louis XV., with the office of director of optics for the sea service. Ten years after, in 1788, he obtained leave to visit Italy, and at Bassano published 5 quarto volumes of mathematical and astronomical papers. This versatile and able man is chiefly renowned for his theory of a universal law of forces, conceived in his earliest manhood, and published at the age of 47.

BOSHUANA. See **BECHUANA**.

BOSIO, **ANGIOLINA**, an Italian opera singer, born in Turin, Aug. 20, 1829. At an early age she showed so decided a taste for music, that her parents were induced to place her under the instruction of Cattaneo, at Milan. The best evidence of her progress and talent for singing, was her debut in her 15th year at Milan, in Verdi's *Due Foscari*, with decided success. Thenceforth, young and undeveloped as she was, a series of triumphs awaited her.

After a short engagement at Verona she proceeded to Copenhagen, and excited an immense enthusiasm among the Danes, who offered her a very lucrative engagement for 6 years. Declining this, she next sang in Madrid with great effect, and in the season of 1848-'49, successfully passed the ordeal of a debut before a Parisian audience. The next season found her singing at the Tacon theatre in Havana, whence, in the spring of 1850, she came to the United States, where for the next 2 or 3 years she was one of the reigning favorites on the operatic stage. She then returned to Europe, and has since sung with increased reputation at London, Paris, St. Petersburg, and other cities. A few years ago she was married to Signor de Xindavelonia. Madame Bosio possesses a soprano voice of great compass, and of a pure and sympathetic quality, which she knows how to employ to advantage.

BOSIO, **FRANÇOIS JOSEPH**, baron, a French sculptor, born in Monaco, March 19, 1769, died July 19, 1845. He was employed by Napoleon, and by the successive Bourbon and Orleans dynasties. The bas-reliefs of the column on the Place Vendôme, and the equestrian statue on the Place des Victoires, were executed by him. He was director of the Paris academy of fine arts when he died.

BOSJESMANS, or **BUSHMEN**, the name given by the Dutch to a tribe of southern Africa, beyond the boundaries of Cape Colony, and on both sides of the Orange river. In personal appearance they resemble the Hottentots, are equally dirty and repulsive, but their figure is smaller and more spare, while their wild and restless life of constant warfare and privation has given them a crafty, wild look, at variance with the easy, stupid expression of the Hottentot. Their language resembles the Hottentot dialect in its harsh, guttural, and snorting sounds, but the two people do not understand each other. They have no fixed residence, build no dwellings, but live in families and roam about, resting under trees, bushes, and other casual shelter, subsisting upon plunder, eating raw flesh, and when that fails living on snakes, mice, grubs, and vermin. In drinking they lie down. Their clothing is a mere sheepskin, although, when they can procure caps or other garments, they wear them. They are armed with knives, small bows and poisoned arrows, which they use with dexterity.

BOSNA-SERAI, or **SERAJEVO**, the ancient *Tiberiopolis*, a city of European Turkey, and capital of the province of Bosnia, situated 495 miles W. N. W. of Constantinople, with 15,000 houses, and pop. 50,000, mostly Turks proper. It is the great commercial focus of Bosnia, and one of the most important towns of Turkey, being the depot of the great caravan trade between Yanina and Salonica, and possessing tanneries and manufactories of jewelry, hardware, and woollen goods. The walls of the town are dilapidated; its citadel contains a series of strong fortresses. In 1697, when Prince Eugene cap-

tured the place, he was unable to take possession of the citadel.

BOSNIA (properly Bosna), the extreme north-western province or eyalet of European Turkey, comprising Bosnia proper, Herzegovina, and parts of Turkish Croatia and Dalmatia, bounded N. by the river Save, W. by Dalmatia and the Adriatic, E. by Servia, and S. by Albania and Montenegro. Area about 28,000 sq. m.; pop. in 1852 about 370,000 Bosnians, 180,000 Croats, 145,000 Morlaks, 250,000 Turks proper, 15,000 Greeks, 12,000 Jews, 428,000 Wallachians, Hungarians, Armenians, Illyrians, Italians, Germans, Gypsies, and various other tribes; total, about 1,400,000. The Bosnians proper are principally of the Greek and Roman Catholic churches, though many of them are followers of Mohammed. The Croats are almost all members of the Christian community, with but few Mohammedans, while the Morlaks, who are the fiercest tribe of them all, are actively hostile to the Turkish religion. The province, or eyalet, is governed by a vali, i. e. viceroy or pasha with 8 tails. Of the other 6 districts, Hersek alone has a governor of the rank of vali or viceroy. Tuzla is under the sway of a mutessarif, or governor-general, while Banjaluka, Bihke, Jeni-Bazar, and Travnik, are under a sub-governor or kaimakan. In the 12th and 13th centuries Bosnia formed part of Hungary. In 1839 it passed into the hands of the Servian king Stephen. For a short time subsequent to the king's death the province formed an independent government, until 1370, when one of the chieftains seized the reins of power as king of Bosnia. At the beginning of the 15th century Turkey asserted its claims upon the province, finally annexing it in 1528; since then, however, the native claimants to power have frequently caused disturbances, especially in 1851. According to the law Bosnia is bound to furnish a contingent of 80,000 men, which, however, consists actually only of about 30,000. The Bosnians proper are unfriendly toward strangers, but industrious, temperate, and domestic in their habits; excellent horsemen, and fond of fishing and hunting. Among the Turkish population, the women assimilate much to European manners, and go in the streets unveiled. The rivers, beside the frontier river, the Save, which joins the Danube, are the Unna, the Bosna, the Verbas, the Drin, and the Narenta. The country is generally mountainous; the offsets of the Julian Alps intersect it everywhere. The climate is mild, the summers warm, but the snow on the summits not melting until late in the spring contributes to moderate the heats. The natural products are fruits of all kinds, a fiery wine and other liquors; grain is not much raised. The mountains are covered with timber, and chestnuts are so abundant that the swine are fed with them. The forests abound in game and the rivers in fish. The cattle are of good breed, but little attention is paid to the stock, and horses, of which there is an excel-

lent race, are bred only by the Turks. The chief occupation is agriculture. Trade is very limited, and is in the hands of the Greeks, Armenians, and Jews. The mountains are rich in mineral products, and anciently gold was obtained from them, but mining is not followed as a pursuit. Iron and quicksilver are found; marble, alabaster, and coal may be had. There are several towns beside the capital, Zvornik, Banjaluka, Mostar, Derbend, and Gradiska. The revenue amounts to about \$300,000.

BOSPORUS (Gr. *Βοσπορος*) frequently, but incorrectly, written Bosphorus, a strait, or narrow arm of the sea, supposed to have been swum across by a heifer, whence its name, "the ford of the heifer." There are 2 straits, not far removed the one from the other, known as the Thracian and Cimmerian Bosphori; the former is the canal of Constantinople, connecting the sea of Marmora with the Euxine, or Black sea; the latter, or Cimmerian Bosphorus, is the strait of Yenikale, connecting the Black sea with the sea of Azof. Both these celebrated straits are of nearly the same length, the former being about 16 miles, from the entrance, anciently the Cyanean rocks, to the harbor of Constantinople; the latter being about 20, from Cape Takli, on the Black sea, to Cape Kamenoi, in the sea of Azof, the Palus Mæotis of the ancients. Beyond this, the 2 straits have no resemblance; the canal of Constantinople being singularly beautiful, lying between steep cliffs, romantically wooded, studded with ruins of all ages mixed with gay oriental erections of the present day, and having deep water to the very shores; the other being a comparatively wide, shallow sound, between arid sand-banks and pestilential lagoons.

BOSQUE, a central county of Texas, watered by a river of its own name and by 1 or 2 small creeks. It has a hilly or undulating surface, about $\frac{1}{2}$ of which is covered by forests of oak, live oak, and cedar. The soil is a dark loam, resting on beds of hard blue limestone. The county was formed in 1854 from part of McLennan county, and is yet but thinly settled. Pop. in 1857, 1,017, of whom 121 were slaves. Capital, Meridian.

BOSQUET, MARIE JOSEPH, a marshal of France, born in 1810, at Pau, in the department of Basses Pyrénées. He entered the polytechnic school of Paris in 1829, the military school at Metz in 1831, became lieutenant of artillery in 1833, and in that capacity went to Algeria with the 10th regiment of artillery, in 1834. There on one occasion, when a small French detachment found itself in a very critical position, the commanding officer being at a loss how to disengage his troops, young Bosquet stepped forward and proposed a plan which led to the total discomfiture of the enemy. He was appointed lieutenant in 1836, captain in 1839, major in 1842, lieutenant-colonel in 1845, colonel, and soon after, under the auspices of the republican government, general of brigade, in 1848. During the

campaign of Kabylia in 1851, he was wounded, at the head of his brigade, while storming the defile of Monagal. His promotion to the rank of general of division was put off in consequence of his reserve toward Louis Napoleon, but when troops were sent to the war in Turkey he obtained the command of the second division. At the battle of the Alma he executed the flanking attack of the French right wing upon the Russian left, with a speed and energy praised by the Russians themselves, and even succeeded in bringing his artillery through pathless and apparently impracticable ravines up to the plateau. It must, however, be added that on this occasion his own numerical force greatly surpassed that of the enemy. At Bala-klava he hastened to disengage the English right wing, so that the remainder of the English light cavalry was enabled to retreat under the cover of his troops, while the Russians were compelled to stop their pursuit. At Inkerman he was ready early in the morning to support the English with 8 battalions and 2 batteries. This offer being declined, he posted as reserves, in the rear of the English right wing, 8 French brigades, with 2 of which, at 11 o'clock, he advanced to the line of battle, thus forcing the Russians to fall back. But for this succor, the English would have been completely destroyed, since they had all their troops engaged and no more reserves to draw upon, while the Russians had 16 battalions not yet touched. As chief of the corps destined to cover the allied forces on the slope of the Tchernaya, Bosquet constantly distinguished himself by quickness, vigilance, and activity. He took part in the storming of the Malakoff, and after that event was made a marshal, and in 1856 a senator.

BOSSI, GIUSEPPE CARLO AURELIO, baron, an Italian politician and poet, born Nov. 15, 1758, at Turin, died in Paris, Jan. 20, 1828. When only 18 years old he made a successful début as a dramatist. In 1792 he was sent on a diplomatic mission to Berlin, and a few months later to St. Petersburg. In 1796 King Charles Emanuel IV. appointed him his agent near Gen. Bonaparte. He acted a somewhat conspicuous part in the various changes imposed upon the Sardinian states by the directory and the consular government of France; and finally was, with Carlo Giulio and Carlootta, a member of the triumvirate which governed Piedmont previous to its annexation in 1802. Some 2 years later he entered the French civil service, and was appointed prefect of Ain. In 1810 he was made a baron of the empire, and promoted to the prefecture of Manche, which post he kept on the first restoration; but having, in March, 1815, adhered to Napoleon, he was dismissed on the second return of the Bourbons. He wrote some lyrical poems, and also *L'Indipendenza Americana* (1785), *La Olanda pacificata*, in 2 cantos, and *Oromasia*, in 12 cantos, giving a description of the principal events in the French revolution.

BOSSIER, a parish in the N. W. part of Louisiana, bordering on Arkansas, and containing 1,066 sq. miles. Red river, which forms its W. boundary, is navigated by steamboats as far as the "raft," an immense mass of drift-wood and trees brought down by the current and lodged in the channel, just on the borders of this parish. Bossier was formed out of the western part of Claiborne parish. It has a population of 6,962, of whom 4,455 are slaves.

BOSSUET, JACQUES BÉNIGNÉ, the most renowned pulpit orator of France, and equally eminent as a theologian, born at Dijon, Sept. 27, 1627, died in Paris, April 12, 1704. After a preliminary education in the college of the Jesuits of Dijon, he was sent to the college of Navarre, at Paris, where he spent 10 years in the most laborious studies for the priesthood. His genius elicited general admiration soon after his arrival at Paris, and he was only 16 years old when he dazzled by his eloquence the literary people of the hôtel de Rambouillet. His first ecclesiastical appointment was in the capacity of canon to the cathedral of Metz, where he rose subsequently to the ranks of archdeacon and dean. As the Huguenots were at that period the chief sectaries, to whose conversion Catholic zeal was especially directed, the vehemence of Bossuet's character soon distinguished him in that function. In 1655 he wrote a refutation of the catechism of the Huguenots; and at last attracted the attention of Anne of Austria, the queen mother, who nominated him in 1661 to deliver the Advent sermon at the Louvre. The following year he delivered the Lent sermon, and the fame of his eloquence soon spread from the court circle to a wider public. It was not, however, till 1668, when he pronounced a discourse on the occasion of Turenne's joining the Catholic church, that he came into effective favor with the king, although the monarch had already on a previous occasion complimented Bossuet's father for possessing such a son. The conversion of Turenne had been effected by a book called "An Exposition of the Doctrine of the Catholic Church on Matters of Controversy," expressly written by Bossuet for the marshal's instruction, and instrumental the same year in the conversion of the marquis de Courcillon, afterward abbé of Dangeau. It was only 8 years afterward, in 1671, that, in compliance with Turenne's urgent invitation, Bossuet consented to publish the book. It was speedily translated into Latin, German, English, Italian, and Dutch. It received the formal approval of Pope Innocent XI. by 2 successive briefs on Nov. 22, 1678 and July 12, 1679, the sanction of the Gallican clergy in their assembly of 1682, and finally gave rise to the memorable conference between Bossuet and Claude, one of the most eminent divines of the Reformed church in France. The "History of the Variations of the Protestants," which was first published in 1688, has since become more celebrated, as the most important of all his contro-

versal works, by which Gibbon in his younger years was converted to the faith of Rome. Louis first gave him the bishopric of Condom, and a year later appointed him to the office of teacher of the dauphin. In 1672 he was made a member of the French academy, which body considered him one of its greatest ornaments. Already he was the most admired and popular preacher of the capital. Crowds filled the aisles of the churches where it was expected that he would lift his voice, and the most eminent people vied with each other in their eagerness to become his listeners. Nor was the excitement destitute of that stimulus which rivalry gives to every public feeling, and both preacher and hearer derived, no doubt, from the rising fame of Bourdaloue, an impulse—the one to increased exertion, and the other to a more intense admiration. Bossuet's appointment as preceptor to the prince caused him to relinquish his bishopric, in lieu of which he received the priory of Plessis-Grignon and the abbey of St. Lucien de Beauvais, a rich benefice which he devoted to charity. His sub-preceptor was Huet, afterward bishop of Avranches, under whose supervision the well-known Delphin classics, *in usum serenissimi principis*, were prepared. Bossuet wrote, for the same object, his *Discours sur l'histoire universelle*, which was published in 1681. It won a high reputation at the time, and continues to be republished, though it has grave defects both as a philosophy and a historical narrative. Yet there are passages in it of wonderful rhetorical skill, and to these, no doubt, more than its general merits, it has been indebted for its success. The first part is a rapid abridgment of the chief facts of universal history; the second part demonstrates the truths of Christianity, and affords the author a fine opportunity for his peculiar power; and the third part expounds the causes of the rise and fall of nations, but is not wholly satisfactory. The same year in which the book was printed Louis XIV. testified his gratitude to Bossuet by conferring upon him the bishopric of Meaux, beside which place he held the other distinguished posts of principal of the college of Navarre, warden of the Sorbonne, councillor of state, and first almoner to the duchess of Burgundy. But his "Universal History" was not the only work he prepared for the dauphin. A treatise, *De la connaissance de Dieu et de soi-même*, another on logic, and a third on the *Politique tirée des propres paroles de l'Écriture Sainte*, are to be enumerated among his works; the first relating to the soul, the body, the union of the two, and of the difference between God and man; the second embracing a description of the three operations of the human understanding, conception, judgment, and reason; and the third containing the doctrines of tradition and authority on the right of kings. His 8 catechisms, his translations of church hymns, and his formulas of prayer, are, doubtless, to be referred to the same period. In the delicate negotiation by which Louis got

rid of the duchess de la Vallière, in order to transfer his affection to a new favorite, he was greatly assisted by the intervention of Bossuet, who procured the discarded mistress a place in a convent, and preached a brilliant sermon on her retirement. France, or rather its clergy, was then engaged in an important dispute with the church of Rome, as to the right of the king to the revenues of the bishoprics in his kingdom. The church maintained that they were ecclesiastical property belonging to the church, but the king asserted that they belonged to his dominion. An extraordinary assembly of clergy was convoked in 1682, to settle the matter, which Bossuet opened with an eloquent discourse in the interest of the king. The result was a decision on the same side, expressed in a series of resolutions, drawn up by Colbert, although ascribed to Bossuet, and which have become highly important in ecclesiastical history. The 1st proclaimed the independence of the temporal power of kings and princes, and of the spiritual power of the popes; the 2d confirmed this temporal independence by the act of the Gallican church; the 3d commanded the clergy to respect it; and the 4th claimed that "although the pope had the principal voice in matters of faith, his decisions were still not irrevocable, at least if they were not confirmed by the consent of the church." This last was, in fact, an attack upon the supremacy of the pope, and exposed Bossuet to charges of error and heresy. But Bossuet was too powerful in himself, and too powerful in the favor of the French monarch, to fear the power of the Vatican. As strongly as he asserted the independence of kings, however, he did not believe in the independence of the individual conscience. Toward the Protestants he was excessively severe, although, in a correspondence with Leibnitz, he professed a wish to see a junction of the Lutheran and Catholic churches, while he resisted the quietism of the amiable and gifted Fénelon, and of his friend Madame Guyon, with great vehemence. Fénelon had been his beloved disciple, but on the publication of his "Maxims of the Saints" he published his *Relation du Quietisme* and engaged in a bitter and inveterate controversy with him, which ended in Fénelon's dismissal from court, and his condemnation at Rome. The suspicion that the "Telemaachus" of Fénelon, not yet printed, as prepared for the grandson of the king, to whom he was mentor, was but a disguised satire on the court and its monarch, contributed to the success of the bishop of Meaux against the archbishop of Cambray. Subsequently to this rigid manifestation of his zeal he took an active part in bringing forward the measures which led Louis XIV. to a repeal of the edict of Nantes, and he consented to the persecution of the Protestants which followed that act. He was at last admonished by failing health to relax his vigor in the discharge of high official functions. The latter part of his life, however, withdrawn more and more from poli-

ties, was devoted to labors of piety and love. A life of Bossuet was written by Burigny (Paris, 1761), and in English by Charles Butler. The posthumous memoirs of Bossuet by the abbé Le Dieu, recently published (4 vols. Paris, 1856-'57), contain interesting information on his public career. Numerous editions of Bossuet's writings have been published, all more or less complete; but the best, probably, is that in 12 vols., large octavo, Paris, 1835-'37. The Versailles edition of 1815-'19 is in 47 vols. 8vo; including Bossuet's biography (in 4 vols.) by Cardinal de Bausset, of which a German translation appeared in 1820. The oldest edition, that of Paris, 1747-'58, is in 20 vols.

BOSSUT, CHARLES, a French geometer, born Aug. 11, 1730, at Tarare, near Lyons, died Jan. 14, 1814. He assisted D'Alembert in writing the mathematical articles for the *Encyclopédie*, became royal professor of hydraulics, and was admitted to the academy when only 80 years of age. In 1792 he published *Mécanique en général*; in 1795, a *Cours complet de mathématiques*, and, in 1802, an *Essai sur l'histoire des mathématiques*. This last book, translated into English and German, became the occasion of bitter criticism from many living mathematicians mentioned in it, but not satisfied with the part allotted to them. He also wrote other mathematical works, and published an edition of Pascal.

BOSTON, a game of cards played by 4 persons, with 2 packs of cards. The cards are never shuffled; one of the packs is dealt, and the other cut alternately to determine the trump, which governs the game. The dealer deals 5 cards to each player twice, and 3 the last time around. If the first player can make 5 tricks, he says, "I go Boston;" and his competitors may overbid him by saying, "I go 6, 7, 8, 9, 10, 11, 12, or 13," as the hand of each may warrant. Should either of them fail to make the number of tricks he "bids" for, he must pay to each competitor a forfeit regulated by a card of prices, which must be prepared beforehand. Without such a card Boston cannot be played. It is the most complicated of all games of cards. It is said to have been introduced into France by Dr. Franklin, who gave it the name of his native city.

BOSTON, the capital of the commonwealth of Massachusetts, the chief city of New England, and the second of the United States in point of commerce, is situated in lat. 42° 21' 24" N., long. 71° 8' 58" W., at the western extremity of Massachusetts bay. It dates from Sept. 7 (O. S.), 1630, when the first settlement was made there by a portion of the company which came from England that year with John Winthrop. The Plymouth pilgrims became acquainted with the peninsula in 1621, and regretted that it had not sooner been known to them. The only person residing there in 1630 was William Blackstone, or Blaxton, supposed to have been an Episcopal clergyman, and to have arrived about 1625. David Thomson and Samuel Maverick lived on 2 islands in what is now Boston har-

bor. It was by invitation from Blackstone that Winthrop and his associates removed from Charlestown to the peninsula, the excellence of the water at the latter place, and its abundance, being the chief inducement to the change. Blackstone soon left the colony, and his lands were purchased by the settlers. More than 50 years later, the last Indian claim to any portion of the territory was extinguished by the payment of "a valuable sum of money" to the claimants. The Indian name of the peninsula, according to Mr. Drake, the highest authority, was *Mushawumuk*. *Shawmut*, he says, "is merely an abbreviation. The meaning of the name is probably free country, free land, or land unclaimed. I have been led to this conclusion by a comparison of certain Indian phrases with their corresponding English. The notion that the name signified a spring of fresh water appears to be entirely conjectural." *Trimountain*, or *Tramout*, was the name given to the peninsula because of the bold appearance of certain eminences on it. Some of the most noted of the colonists were from Lincolnshire, and it had from the first been their intention to give the name of Boston to their chief settlement, in honor of the Rev. John Cotton, vicar of St. Botolph's church, in the Lincolnshire Boston. Boston is a contraction of Botolph's-town, and the English Boston, or Bostonstow, took its name from a monastery founded by the Saxon St. Botolph, A. D. 654. So that the capital of Puritanism derived its name from a Catholic saint; but inasmuch as Botolph is the tutelary saint of mariners, and his appellation comes from 2 Saxon words signifying boat and help, the name is not inappropriate to a place which has become distinguished for its commerce. Much of the early history of the town belongs to the history of the colony of Massachusetts, and will be found under that head. We have the usual accounts of hardships endured from severity of climate, scarcity of food, and human contention. The growth of the place was slow, and some time elapsed before Boston had a decided predominance over some other towns in the colony. Watertown, in 1631, was assessed, for a special purpose, as high as Boston, and Charlestown and Dorchester but 10 shillings less each. Even in 1638 the place is called a hamlet, and stated to have but 20 or 30 houses, by one who then visited it. Yet it was thought much of by the more aristocratic class of Puritans in England, and but for the outbreak at home, occasioned by Land's interference with the religion of Scotland, many of them would probably have there taken up their abode. The town records begin about 1634, and the ink with which some of the entries were then made, by John Winthrop's own hand, is yet bright, at the end of 2½ centuries, an emblem of his name. The officers who subsequently were known as "selectmen," were in existence in 1634, but how the institution originated is unknown, though it is impossible to magnify its importance. The selectmen man-

aged local affairs much after the same way that is now done in most New England towns. The town meetings begin to be of importance at this date. There were agrarian laws adopted, according to the true meaning of the words, the division of lands receiving much attention. Speculation in land was early commenced in Boston. The first grand jury of the country met at Boston, Sept. 1, 1635, and presented 100 offences. The church of Boston was much troubled about Roger Williams and his heresy, and finding him resolute, handed him over to the general court, which satisfactorily demonstrated the evil nature of his opinions by banishing him. The Antinomian controversy broke out in 1636, the occasion of it being the action of Mrs. Anne Hutchinson, a woman of superior understanding, whose conduct greatly vexed the church. Boston took the liberal side, and the controversy, by causing her to lose some of her best citizens, retarded her growth. Free schools were established, the town paying liberally for their support, and Indians being taught gratis. Negro slaves were first brought to the town in 1645, much to the people's anger. A malignant disease raged in 1646, and the colonists were much plagued by the Episcopalians, who were so unreasonable as to demand equality of privileges with their neighbors. In 1651, the place is described by an eye-witness as very flourishing, and the streets as filled with children. The first great fire occurred in 1654, but no light is thrown on its ravages. Mrs. Anne Hibbins, a widow, and said to have been a sister of Governor Bellingham, was hanged in 1656 for witchcraft. When, two years later, the general court made a law for the punishment of Quakers, 2 of the Boston members dissented; but 8 Quakers were executed on the common, for which the colony generally, and not Boston specially, is to be held responsible. When Goffe and Whalley, the two regicides best known in America, came to Boston, in 1660, they were openly entertained by the principal inhabitants. Boston sullenly acquiesced in the restoration, but Charles II. was not proclaimed there until 14 months after his arrival at London. The town became the head-quarters of that opposition to the home government which was to last until the separation of the two countries. Down to the date of the English revolution there was a constant antagonism, sometimes fierce in its manifestation, between the colony and the royal government, and which was most intensely felt in Boston. A description of Boston in 1671 shows that the town had much increased in numbers and wealth, inasmuch as 8 meeting-houses hardly sufficed for its spiritual wants, and church-going was then all but universal. The streets were large, and many of them paved with pebble stones. The buildings were fair and handsome, some being of stone, and one is mentioned that cost £3,000. The town is said to be rich and populous. The next year a report was made to the English government

in which the number of families is stated at 1,500, and it is added that not 20 houses contained 10 rooms each. When the general court voted £1,890 for the rebuilding of Harvard college, Boston paid £800. In anticipation of attacks from the Dutch, in 1672, extensive fortifications were commenced. "Philip's war" began in 1675, when Indian scalps were for the first time brought to Boston, as also were the heads of some of the unfortunate natives. Some Indians having been tried at Boston, and acquitted, the people were with difficulty prevented from lynching them; and one Indian was put to death by torture, to appease the mob. Quakers, and others of the townsmen who refused to serve against the natives, were compelled to run the gauntlet. They were Boston men who led the van in the famous attack on the Narragansett fort, and the town is said to have suffered nearly 5 times as much as any other place from the war. Liberty to establish a printing press in the town had been granted in 1674, with 2 ministers for censors; and a printing house was opened in 1676 by John Foster, a graduate of Harvard college. He printed the histories of the Indian wars written by Hubbard and Mather. In Nov. 1676, happened a fire, which destroyed 46 dwellings, a church, and other buildings. There being no fire department, the inhabitants were favored with a rain, or the conflagration would have been more extensive. A fire department was then organized, but not with much immediate effect; for, in 1679, another conflagration swept away 80 dwellings and 70 warehouses. The loss was estimated at £200,000. The cry of "incendiaries" then commenced, and ever since has been kept up. These evils were regarded as direct visitations for the sins of the town. The war waged by the house of Stuart against the English constitution, was severely felt in Boston, and during the reign of James II., and under the rule of his proconsuls, Dudley and Andros, the town lived under a tyranny. Yet James's "declaration of indulgence" was well received there, and the churches held a thanksgiving on its account. On April 18, 1689, the people of Boston rose against the government, and overthrew it. In no part of the British empire was the revolution of 1688 more warmly supported than in Boston. An accession to the population was made during the rule of Andros, by the arrival of some of the Huguenot exiles, among them being Pierre Baudoin, ancestor of the Bowdoin, one of the nation's historical families. Piratical depredations having caused much loss to the place, an armed vessel was despatched, which succeeded in bringing in the depredators, ten of whom were hanged. The witchcraft delusion raged in 1692 in Boston, as in other parts of New England. In 1695, the town's churches were much agitated by the discussion of the question, whether it is lawful for a man to marry the sister of his deceased wife, and they decided it

in the negative, which decision was followed by the enactment of severe laws against marriages of affinity, by the general court. The winter of 1697-'98 was long remembered for its severity, snow falling more than 20 times, and the harbor being frozen up quite out to the sea, for 2 months. Trade suffered, and the people were reduced to the verge of famine. A bitter account of the place, written by an Englishman who visited it at the close of the century, speaks of the buildings being like the women, neat and handsome, and of the streets being of pebble, like the hearts of the men. Lord Bellamont, who came over as royal governor in 1699, was very popular with the Bostonians. A list of all the streets, lanes, and alleys was made in 1708, and they were found to be 110 in number. Long wharf was commenced in 1710, running 800 feet into the harbor. A severe fire happened in 1711, burning 100 edifices, including the first church that had been erected in Boston, after the rude hut which had witnessed the primitive devotions of the earliest settlers. Several persons were killed, and others wounded, by the blowing up of houses, and a number of sailors perished while piously endeavoring to save the church bell. Mail routes were at this date established at Boston, running both east and west. John Campbell was appointed first postmaster, under an act of parliament establishing a general post office in North America. He had previously been colonial postmaster. What is known as "the great snow storm" occurred Feb. 1717, and for the time suspended intercourse of neighbor with neighbor. Some of the Scotch-Irish settled in Boston in 1720, and introduced the linen manufacture, which excited much interest, and was greatly encouraged, spinning schools being established. Boston had often been ravaged by the small-pox, one of the severest scourges of our ancestors, and when, in 1721, it again broke out virulently, the celebrated Dr. Zabdiel Boylston determined to introduce inoculation. He encountered an opposition as savage and malignant as ever waited on any benevolent reform, and which will even disadvantageously compare with that which was experienced by Lady M. W. Montagu in England. The medical men were especially venomous. It was owing to the influence of Cotton Mather that Dr. Boylston was allowed to proceed, a fact that should be remembered, when that eccentric divine's hallucinations about witchcraft are dwelt upon. Of 286, on whom the doctor operated, 6 only died, while 844 died of the 5,759 who took the disease naturally. As the population of Boston, at the extent, could not have been above 12,000, half the people were attacked. The first insurance office was established in 1724. The traffic in slaves prevailed to some extent in 1727, but the action of the town was strongly against it on many occasions. The town was divided into 12 wards in 1736. The year 1740 saw Whitefield in Boston, where he preached to immense crowds; his farewell discourse, delivered on the common, being at-

tended by 20,000 persons. The town was the scene of great riots in 1747, in consequence of some of the citizens having been impressed by Com. Knowles, and then was displayed that fierce spirit which, 30 years later, and under proper guidance, was destined to accomplish such great things. The first Bibles that were published in Boston are supposed to have appeared in 1749, clandestinely, owing to English restrictions. The first theatrical performance was in 1750, Otway's "Orphan" being the piece selected. This led to the passage of a law which prevented any more dramatic exhibitions for 25 years. The list of letters remaining in the Boston post office, containing 851 names, was published for the first time, Jan. 30, 1755. Nov. 18, 1755, the town was "dreadfully shaken" by the occurrence of an earthquake, perhaps the severest ever known in New England, and by which great damage was done, and much fright caused. It seems to have belonged to the series of shocks which at that time were shaking a large part of our globe, from Lake Ontario to Fez, and the most terrible of which took place at Lisbon. Boston experienced her full share of the effects of the "old French war," and at one time a large force was assembled there. March 20, 1760, "the great fire" broke out, consuming 349 buildings, the entire property destroyed being valued at £100,000. Relief was sent to the sufferers from the other colonies and from England. The case of writs of assistance, which began what we specifically call the American revolution, was tried at Boston in 1761. James Otis so distinguished himself therein, that he became the most influential man of the town, and was said to have governed it for the next 10 years. At the first news of the intention of the British government to apply its revenue system comprehensively to the colonies, Boston assumed that determined stand in behalf of liberty and law which gave her so imposing a part in the birth of the nation, and brought upon her the weight of England's power. The town meetings of the ten years that preceded the battle of Lexington were among the most important public assemblies mentioned in history, tried by the consequences of their language and deeds, while the action of the principal men of Boston, including the clergy, was such as would have done honor to the leaders of the country party in the long parliament. "The Boston massacre" happened March 5, 1770, when 3 persons were killed by the fire of the soldiery, and 8 wounded. The destruction of the tea, in 1773, was pronounced by the tory governor of the province the boldest stroke which had been struck in America. It was an act of defiance to the home government, and was accepted in that sense. The prominence which George III. and his ministers gave to Boston, and the special proscription of her two most eminent citizens, were tributes to her power and position that could not be withheld. American and Bostonian were then convertible terms. The passage of the Boston port bill

was the practical retort of the imperial government to the proceedings of the Bostonians. But though the commerce of the town was for the time destroyed, and the independence of the local government suspended for nearly 2 years, other places refused to profit from Boston's sufferings; and her people received from all parts of the country warm sympathy and solid assistance. In the early months of 1775, there were about 4,000 British troops in Boston, and several armed vessels in the harbor. The battle of Lexington roused the country, and in a short time Boston was beleaguered by a large American force, full of spirit, but destitute of all the other essentials of war. Gen. Washington arrived in the besieging camp July 2, and assumed command the next day. The siege was prosecuted with all the vigor that could be displayed, but it lasted nearly a year. On the night of March 4, 1776, the besiegers seized and occupied Dorchester heights, which commanded both town and harbor. The English made preparations to recover the heights, but were prevented from assailing them by the severity of the weather, which was extreme until the 7th, by which time the American fortifications had been rendered impregnable to any force the enemy were in a condition to bring against them. The British commander was compelled to abandon the place March 17, taking 1,000 Tories and upward with him, of whom nearly $\frac{1}{2}$ were Bostonians. He sailed for Halifax, leaving a few vessels at Nantasket. These were driven off June 14, the anniversary of the last day on which, 2 years before, trading vessels were allowed to enter or leave Boston, under the port bill. Since that time Bostonians have never seen the smoke of an enemy's camp. Civil government was immediately resumed in full force. Washington entered Boston (which he had visited 20 years before) immediately after the enemy's retreat. During the war, Boston supported the reputation she had acquired in the earlier stages of the contest. In the troublous years that immediately followed the peace, the town was the scene of important events, accounts of which belong to the history of Massachusetts. Her people energetically supported the policy that ended in the adoption of the federal constitution. In the material prosperity that followed the inauguration of the new government Boston largely shared. Her business increased. Her commerce was extended to almost every part of the world. Her history since 1789 is not fruitful of salient events. Conservative sentiments soon began to display themselves, and obtained an ascendancy that has sometimes been shaken, but never overthrown. In 1822, Boston was made a city, 170 years after the change had been first talked of, and 118 after the failure to have the place incorporated in 1709.—Boston's growth for 2 centuries was not rapid. We have no exact figures for her population during the first 4 generations of her existence. It is supposed to

have been 7,000 at the close of the 17th century, and the supposition is not unreasonable. In 1742 it was placed at 18,000, probably an exaggeration, as she is known to have had only about that number 50 years later. In the year 1764-'5, during the administration of Gov. Barnard, the first colonial census was taken, and under it the population of Boston was returned at 15,520. Mr. Bancroft says the population was "about 16,000 of European origin" at the close of 1768; and Mr. Frothingham puts it at about 17,000 in 1774. The first national census, 1790, showed it to be 18,088; that of 1800, 24,937; of 1810, 33,250; of 1820, 43,298; of 1830, 61,892; of 1840, 93,383; and of 1850, 186,884. If the returns under the census of 1764-'5 were correctly made, Boston was 40 years in doubling her population after that date. The revolution, and the troubles which followed it, retarded her growth. Down to 1790, Boston did not increase so fast in numbers as the colony, province, or state of which she was or is the capital; but since that time the increase has been in her favor, and largely so. Had all Massachusetts increased at the same rate with Boston, between 1765 and 1850, the state's population at the latter date would have been considerably above 2,000,000, instead of being less than 1,000,000. The local census of 1855 made the population 160,508. It is now (May, 1858) about 170,000. The character of the population has much changed during the last 80 years. Formerly it contained but few foreigners, and was singularly homogeneous, but now nearly $\frac{1}{4}$ of it is composed of foreigners, or of persons whose parents were foreigners. The number of births in 1857 was 5,881, the parents being foreign-born in 8,801 cases, while in 546 others 1 of the parents was of foreign birth. The deaths were 3,958, or one for every 42.95 of the population, estimating the latter at 170,000. Boston has several places in her immediate vicinity, so closely connected with her as almost to belong to her. These are the cities of Charlestown, Chelsea, Roxbury, and Cambridge, and the towns of Dorchester, Somerville, North Chelsea, and Winthrop. Their united populations nearly equal the population of Boston, and they may be considered as forming one community. Chelsea has sought to be annexed to Boston, and the project of uniting Roxbury to her larger neighbor is now under discussion.—The original territory of Boston embraced only some 600 acres, but it has been quadrupled by acts of annexation and reclamation, a large part of the city standing on "made land." The legal division of the city is into 12 wards, but usage has divided it into certain districts. North Boston, or "the North End," is the oldest part of the place, and still retains much of the irregular appearance that characterized it in colonial times. Some of the streets are crooked, and very narrow, a few being little better than lanes. Many old buildings yet stand there. But change is there steadily at work, and every

year sees the work of alteration going on; yet it is by no means probable that that quarter will ever again become so important as it was in the earlier days of Boston. It comprised the larger portion of the Boston which makes so grand a figure in our revolutionary history. West Boston is mostly new, and contains the "fashionable quarter" of the town. It lies between Canal street and the common, and west of Tremont and Hanover streets. It contains many public edifices, among them being the state house, and the building of the Boston Athenæum. Most of the houses are of brick or stone, and many of them are costly and elegant. It contains many historical sites. The population is numerous and dense. "The South End" includes all that part of Boston which lies to the south of Winter and Summer streets, and running to Roxbury. South Boston was originally the north-eastern part of the town of Dorchester, and was annexed to Boston in 1804, except Washington Village, which was annexed in 1856. It is separated from old Boston by an arm of the harbor that runs to Roxbury. With the exception of East Boston, it is the newest quarter of the city, but it has increased rapidly, and its appearance is strikingly different from old Boston, being open, airy, and cheerful. Two bridges connect it with Boston proper. It forms ward 12, in connection with Washington Village. East Boston is an island, formerly known as Noddle's Island, but more commonly bearing the name of Maverick, from Samuel Maverick, who lived there 230 years ago, in an armed fort. It dates from 1830, when its "improvement" was commenced. It now contains some 17,000 inhabitants. It is a place of much enterprise, and is united by the Grand Junction railroad with all the railroads that proceed from the city. The depot of the Grand Junction is connected with the wharves, which have great depth of water. The water frontage is almost 20,000 feet, and the wharves are the best in the city. The Cunard steamships have their berth there. Ship-building is one of the most important branches of the business of the place. "The Great Republic," the largest sailing ship in the world, was there built. Ferries connect this quarter with old Boston.—The position of Boston is highly favorable to commercial pursuits. The harbor is spacious, containing about 75 sq. m., and extending from the city to Medford, and to Nantasket roads. Beside smaller streams, there fall into it the Manatticut, the Neponset, the Mystic, and the Charles rivers. There are more than 50 islands, or islets, in the harbor, most of which, however, are of little consequence, except as affording protection to it. Boston light stands on Light-house island, where it has stood for almost a century and a half, and marks the line of the harbor in that direction. Northerly from the light-house run a chain of islands, rocks, and ledges, 3 miles long, to the Graves. George's island commands the open sea, and Fort Warren, a very strong fortification, is built on it, the island being

national property. It is expected to render the harbor impregnable at that point; and it is susceptible of defence there from other spots, on some of which are yet to be found the remains of fortifications erected in the last century. Castle island—so called from a fortress which was erected there in 1638, and which subsequently was rebuilt, and called Castle William in honor of William III.—lies further up the harbor, and is the site of Fort Independence, belonging to the United States. Governor's island is a mile to the north of Castle island, and Fort Winthrop, a strong fortification, stands there. This island passed into the possession of John Winthrop in 1632, and for a long time was known as "the Governor's garden." It is still in the possession of the Winthrop family, except that portion of it which has been ceded to the national government. Long island is large, and attempts have been made to render it a place of residence, but with little success, though a fine hotel stands on it. Deer island is now occupied by city institutions, and Rainsford island by state hospitals. On Thompson island is the Boston asylum and farm school for indigent boys. Many of the islands, if not all of them, are gradually disappearing under the action of the sea; and water now covers places where cattle were pastured within the memory of persons now living. The harbor affords ample anchorage for 500 ships of the largest class. Boston early became distinguished for her commerce. In less than half a century after the foundation of the place, its merchants traded, not only with other parts of America, and the leading nations of Europe, but with the Canaries, the coast of Africa, and Madagascar. Their wealth was the subject of remark to all visitors. The first vessel belonging to Boston, of American build, was the bark "Blessing of the Bay," built at Mystic, for Gov. Winthrop, and launched July 4, 1631. She was of 30 tons, and her first voyage was to Long island and New York. The first ship built at Boston was the *Trial*, in 1644, which immediately made a voyage to Spain. The same year a fur company, composed of Boston merchants, was formed. During the year ending Dec. 25, 1748, 430 vessels entered the port, and 540 were cleared. A century earlier the arrivals of ships were only about 1 a month, but even then large quantities of country produce were exported, 20,000 bushels of corn being mentioned among the exports of 1645. The coining of money in Boston, in 1652, by order of the colonial government, is regarded as evidence of the town's success in commerce, bullion having accumulated there from the profits on foreign trade. This commercial character had much to do with shaping the history of Boston, and had also important effect on the current of American events. The efforts of the later sovereigns of the house of Stuart to shackle the commerce of the colonies were met by a spirit of resistance in Boston that rendered them of little avail; and when, late in the next century, "the tea" was thrown into the harbor, the act was in no respect

different from what had been done at a much earlier period, so far as the spirit of resistance was concerned. After the English revolution, the course of the home government was mild, though its theories were illiberal. It was not until 1761 that was commenced that policy, the end of which would have been the destruction of the commerce of the colonies, had it not encountered a stubborn opposition. It so happened that Boston became the scene of the earliest attempts that were made to coerce the colonial merchants; and her mercantile classes were, therefore, forced to make themselves conspicuous as revolutionists. The revolution was entered upon as much for the vindication of the freedom of commerce as for that of personal rights. After the revolution, and when order had been restored, Boston rapidly attained to eminence in commerce, and her merchants to fame. The number of foreign arrivals for the years 1789 and 1790 is not to be had, but they were 399 in 1791, and 2,985 in 1857. In 1806 they were 1,088, and but 83 in 1814, the last year of the second war with England. For the year ending March 31, 1858, the number of coastwise clearances was 2,281, exclusive of those coasters which sailed under license. The custom-house at Boston is a large and costly edifice, and was 12 years in building, 1837-'49, at an expense of \$1,076,000, including every thing. It is of the Doric order, and is 140 feet long from north to south, 95 feet through the centre, and 75 feet at the ends. The porticoes are 67 feet long, and project 10 feet on each side. The height is 95 feet. It stands at the head of a dock between Central and Long wharves, fronting east on the dock, west on India st. The form is that of the Greek cross. Arthur W. Austin, Esq., is now collector of Boston, and Col. Charles G. Greene is naval officer. The whole number of persons employed in the collection district is 198, at an annual cost of \$273,861. The revenue collected in the district for the month ending April 30, 1858, was \$321,888 61, which is a decrease of \$800,272 14, as compared with the corresponding month of 1857. The shipping of Boston amounts to 525,000 tons. The trade of Boston with British India is very great, and has principally grown up since 1830. The number of ships that arrived in Boston from Calcutta, in 1856, was 78, bringing goods of the value of more than \$7,000,000. The exports to Calcutta, including foreign goods, were of the value of \$686,891, among which were 12,179 tons of ice. The ice trade is a Boston invention, and is principally carried on thence. Frederic Tudor, Esq., member of a family which has contributed several eminent men to the service of the country, originated the trade, in 1806, when he shipped 180 tons to Martinique. For 20 years, the losses were great, but success was finally won by talent and perseverance. Mr. Tudor had a monopoly of the trade for 30 years, when, its brilliant success having become known to all, he found competitors. It is believed that, but for the ice trade, the Calcutta trade of Boston

never could have become important. The freight paid by Mr. Tudor on ice to India amounts to from 10 to 15 per cent. of the earnings for the whole run of the ship out and home, and it is all clear profit. The value of the ice sent to Calcutta in 1856 was \$117,266. The whole cost of the ice shipped at Boston is \$300,000, and the amount is about 150,000 tons. The average freight is \$2 50 per ton. This business, indeed, has added immensely to New England industry and profits, in various ways. With southern Europe Boston carries on a large trade, and there is not a port of any note in commerce, in the Mediterranean, the Adriatic, and the *Ægean*, which her ships do not visit. The Turkish trade is almost entirely in the hands of her merchants, mainly through the ancient port of Smyrna. The imports from Great Britain, in 1856, were of the value of more than \$17,000,000; from Cuba, \$5,046,968; from Chili, \$2,047,750; from the Philippines, \$2,047,199; from British North American possessions, \$1,969,126; from France, \$930,809; from Russia, \$931,930; from Hayti, \$780,077; from the Dutch East Indies, \$710,237; from Turkey, \$681,030; from Holland, \$533,591; from the Two Sicilies, \$499,107; from Buenos Ayres and Argentine republic, \$554,509; from Brazil, \$539,564; from Sweden and Norway, \$461,430; from China, \$329,781. The total value of imports that year was \$48,014,900. The value of the fishing trade was about \$6,000,000, Boston being at the head of the business, which she commenced in 1633. The exports for 1856, including \$12,053,532 in coin and bullion, were \$24,580,576.—The industry of Boston is great and various. According to the returns of the industry of Massachusetts, made June 1, 1855, the value of the articles manufactured was \$48,188,956 82, under 94 heads, for the county of Suffolk, $\frac{1}{4}$ of which must be credited to Boston, being more than $\frac{1}{4}$ of the whole industrial production of Massachusetts. The number of vessels launched, in 1856, was 26, of 28,844 tons; and 7 were on the stocks at the close of that year, of 6,950 tons. Of these, 30 vessels, of 81,434 tons, were of East Boston build. Much of the city's prosperity is due to the 8 great lines of railroads that run from it, all of which are fed by a large number of lesser lines, and connected by the Grand Junction railroad. There are four horse railroads which connect it with Roxbury, Dorchester, Cambridge, Charlestown, and other places. Other horse railroads are soon to be constructed, and those existing are to be extended. The number of passengers carried over all these roads, in 1857, was 12,687,111. Communication with Chelsea is by the Winnisimmet ferry, established in 1631, and believed to be the oldest ferry in the union. The Western avenue, from the foot of Beacon street to Sewall's Point in Brookline, was completed in 1831, at a cost of over \$600,000, and is $1\frac{1}{2}$ mile long. Charles river bridge, made in 1786, and Warren bridge, in 1828, connect Boston with Charlestown, and

have just become free. West Boston bridge to Cambridge, and Canal bridge to East Cambridge, were made free in 1858. Federal street bridge and South Boston bridge are between old Boston and South Boston. Washington avenue leads to South Boston, Dorchester avenue to Dorchester, and Harrison avenue to Roxbury. Two lines of ferry-boats run between Boston and East Boston. There are lines of steamboats that ply between Boston and the principal ports of Maine, and some portions of British North America. Others connect Boston with some of the southern ports, and numerous lines of sailing packets are established between the city and the principal places of the union. The number of banks is 37, with capitals of \$82,960,000. There are 5 savings banks, having deposits to the amount of \$9,578,426 86, and 63,274 depositors. There are 18 stock, 8 mutual fire, 5 mutual marine, and 2 life insurance companies. The city debt is \$8,422,999.77, of which \$5,001,961 11 constitutes the water debt, and \$3,421,038 66 the ordinary debt. Boston long felt the want of a supply of water, but it was not until 1848, during the mayoralty of Josiah Quincy, jr., that the want was met. Water is brought from Long Pond (Lake Cochituate), in Framingham, Wayland, and Natick (Middlesex co.), 20 miles west of Boston. The lake covers 659 acres, and drains some 14,400 acres. Water is conveyed by a brick conduit, nearly 15 miles long, to a grand reservoir in Brookline, and thence to distributing reservoirs in Boston, East Boston, and South Boston. The quantity conveyed is 11,000,000 gallons daily. The Brookline reservoir will hold 100,000,000 gallons, sufficient for 14 days' consumption, it is estimated, though the average daily consumption in 1857 was 12,726,000 galls. Entire length of pipe, 14 inches and upward, 119½ miles; number of service pipes, 20,434; hydrants, 1,308; takers of water, 21,602; receipts of water rents, \$269,828 83. The enterprise of bringing water into the city encountered a vigorous opposition, which was for years successful, the cause of monopoly, filth, and disease not lacking able champions. The valuation of the city's property in 1857 was \$258,111,900, being an increase of about \$225,000,000 in 50 years. The tax authorized for 1858 is \$2,170,000, or \$280,188 less than that of 1857, \$180,000 of which reduction is due to the diminution of the state tax. The number of polls is 33,163, from whom a revenue of \$49,743 is derived. The rate of taxation is \$9.30 per \$1,000. The number of streets, squares, courts, lanes, and alleys, is 950.—The most noted public building is Faneuil hall, which has a historical reputation, because of the meetings of the revolutionary patriots that were there held. Most of the Boston political meetings are held in it now, when they are meant to be of a comprehensive character. The hall was originally commenced in 1740, by Peter Faneuil, a gentleman of Huguenot descent, and a native of New Rochelle, N. Y., and by him given to the town.

It was nearly destroyed by fire in 1761. Rebuilt, and enlarged in 1806, it now covers nearly twice its first area. The hall is 76 feet square, and 28 feet high. It is adorned with portraits of eminent Americans, conspicuous among which is an original one of Washington by Stuart. There is a full length of Peter Faneuil, a copy. The room over the hall is used by the city's military companies for drill, and has several smaller rooms attached to it, which are used as armories, &c. The basement, which formerly was a market, is now a series of stores. The assessors, overseers of the poor, &c., have their offices in the building. Faneuil hall market was built in 1824-5, during the mayoralty of Josiah Quincy, sen. It stands between North and South Market streets, is 586 feet by 50, and contains 128 stalls. It is of Quincy granite, and cost upward of \$1,000,000. The merchants' exchange is on State street, and was completed in 1842, the building alone costing \$175,000. Its front is 76 feet, and runs 250 feet to Lindall street, and is 70 feet high. It covers 13,000 feet of land, and the front is of Quincy granite. The reading-room is 80 by 58 feet, and the roof is supported by 18 columns in imitation of Sienna marble, with Corinthian capitals. The post office is in it, but it is in contemplation to remove it to Summer street. The city hall, containing the municipal offices, is in Court square. The court house is also in Court square, was finished in 1835, is of Quincy granite, and cost about \$200,000. The new gaol, completed in 1849, cost \$409,545, is 70 feet square, and 85 feet high, with 4 wings. The exterior is of Quincy granite, and the remaining portions of brick, stone, and iron. The building of the Massachusetts general hospital (incorporated 1811) is at the corner of Allen and Blossom streets. It is of granite, and has a front of 168 feet and a depth of 54 feet, with a portico of 8 Ionic columns. It was much enlarged in 1846. The medical college is in North Grove street, and is connected with Harvard college. The state house, which is on Beacon street, and near the centre of the city, was commenced in 1795, when Samuel Adams was governor, and was finished and occupied in January, 1798. Its form is oblong, 173 feet front by 61 deep. To the top of the dome the height is 110 feet, and the hill on which it stands is upward of 100 feet above the water of the harbor. The view from the dome is very fine, as it includes the harbor with the ocean beyond, an immense extent of country in various directions, covered with towns and villages, and the misty blue hills of Milton. The hall of the house of representatives, the senate chamber, the rooms of the governor and council, the offices of the secretary of state, state treasurer, adjutant-general, and auditor, and the state library, together with some minor concerns, are in the state house. A statue of Washington, by Chantrey, was placed in the state house in 1828, by the Washington monument association. Large additions have been made to the state house since 1852, for the accommodation of the government. The

new library room is 88 by 27 feet, and 86½ feet high. The cost of the original building was \$183,000, and the additions have cost upward of \$204,000. The land was purchased by the city of Boston of the Hancock family, and given to the state. It was then known as "Gov. Hancock's pasture." The old state house was erected in 1748, and was for half a century the scene of government, being the building which is of such frequent mention in the revolutionary history. It is in Washington street, at the head of State street, dividing the latter, and obstructing a beautiful view. Masonic temple, in Tremont street, has been purchased by the U. S. government for a court house. Tremont temple was erected in place of the building burned in 1852, which had been made from the Tremont theatre. The main hall is 130 feet by 73, and is 45 feet high, with 8 galleries. Music hall, completed in 1852, fronts on Winter street and on Bumstead place. The central hall is 120 feet by 80, and 65 feet high. There are 2 tiers of galleries on 8 sides. It contains Crawford's statue of Beethoven. The almshouse on Deer island is a vast structure, built with a just regard to the purpose to which it is assigned, and is admirably governed. There are houses of reformation at South Boston and on Deer island, and the house of correction and lunatic hospital are at South Boston. The Massachusetts charitable mechanics' association are now erecting, at the corner of Bedford and Channcey streets, a building which promises to be an ornament to the city. It is to be of light freestone, and of Romanesque style. The station house of the Boston and Fitchburg railroad company is the finest edifice of the kind in America, being gigantic, strong, and beautiful.—The press of Boston is the oldest in the United States. The first journal published in North America was "The News Letter," which was commenced April 24, 1704, by John Campbell, postmaster. It was published 73 years, ceasing in 1776, with British rule. The second paper was the "Boston Gazette," commenced 1719, of which James Franklin was printer. In 1721 Franklin commenced the publication of the "New England Courant." Benjamin Franklin was an apprentice to his brother, and wrote for the "Courant" at the age of 16. The paper was for some time published in Benjamin's name. Many newspapers were founded in the last century, and several magazines. Samuel Adams was a contributor to the "Independent Advertiser," a paper founded in 1748. There are now 117 newspapers, of which 9 are published daily, and 49 periodicals published at intervals of 14 days and upward, including the "North American Review," the "Christian Examiner," and the "Atlantic Monthly."—The schools of Boston have a high reputation. Beside the Latin school, the English high school, and the girls' high and normal school, there are 18 grammar schools, and 211 primary schools. The number of scholars in the winter of 1857 was 24,231, and in the summer it was 23,855. The amount of

ordinary expenditure for the support of schools is \$333,700.—The first literary institution of Boston is the Athenæum. It dates from 1804, its germ being "the Anthology club." The association was incorporated in Feb. 1807. The beautiful building now used by the Athenæum was completed in 1849. It stands on the south side of Beacon street, and between Bowdoin and Somerset streets. Its length is 114 feet, and its breadth is irregular; the height is 60 feet. The material is the Patterson freestone. The 1st story contains the sculpture gallery and two reading-rooms. The library is in the 2d story, and the picture gallery in the 3d. The building cost \$136,000, and \$55,000 was paid for the land. The number of shares is 1,000, of the par value of \$300, under which price none have ever been issued. The value of the entire property is \$485,000. The amount expended for statuary and paintings is \$19,871. The library contains 70,000 volumes, and 2,000 are annually added to it, at an expense of \$5,000. The gross yearly expenses are \$12,000. Thomas G. Cary is president of the Athenæum, and William F. Poole librarian. The chief benefactors of the institution are: James Perkins, who gave it a house on Pearl street, which was used as a library, &c., for 27 years, and then sold for \$45,000; John Bromfield, who bequeathed it \$25,000; Samuel Appleton, who bequeathed it \$25,000; James Perkins, Jr., who gave it \$8,000; Thomas H. Perkins, who gave it \$8,000; and T. W. Ward, who gave it \$5,000. Many other persons have given or bequeathed lesser sums, or books, or articles for the picture and sculpture galleries. No institution of the kind in America is better managed, or in a more catholic spirit, or has done more for the advancement of letters, science, and the arts. The American academy of arts and sciences, incorporated 1780, and of which Dr. Jacob Bigelow is president, has its rooms in the Athenæum building, and its library (9,000 vols.) is there. The public library is a new institution. Joshua Bates, a wealthy banker of London, whose early life was passed in Boston, having offered the city \$50,000 toward the purchase of books, if a suitable building should be provided, in 1852 his offer was accepted, and an edifice was erected on Boylston street, opposite the Common, which was completed and delivered to the trustees Jan. 1, 1858. The cost of the land and building was \$365,000. Abbott Lawrence gave \$10,000, and Jonathan Phillips the same amount, to the institution; and lesser sums, and books, were given by other gentlemen. The number of volumes is 60,000. The institution is liberally and efficiently managed. The mercantile library association has rooms in a building at the corner of Summer and Hawley streets, including reading room, hall for literary exercises and general meetings, and a library of 18,000 volumes. It was founded in 1820, and has lectures in the winter. The number of members is 1,600. The library of the Boston library society is in Essex street, and has 15,000 volumes. It

was founded in 1794. The Historical Society's rooms are in Tremont street. Its library and collections are valuable. The Lowell institute was founded by John Lowell, jr., who bequeathed \$250,000 to provide regular courses of free lectures; and his plan has been carried out with great success.—The benevolent institutions of Boston are numerous, and effective in their operations. There are 89 societies which come under this special head. The Massachusetts asylum for the blind, though it is largely aided by the state, and is in part the work of other places, is of Boston origin, and has derived much of its means from the liberality of Boston people. Under the charge of Dr. S. G. Howe, it has been a most effective means for alleviating some of the worst evils to which humanity is exposed. At the date of the last annual report, it contained 114 inmates. Indigent persons are admitted gratuitously. The Massachusetts school for idiotic and feeble-minded youth, at South Boston, also under Dr. Howe, has been very successful. The pupils are 63 in number. The eye and ear infirmary, exclusively for the poor, is on Charles street, and is provided with every thing necessary for the efficient treatment of the sick. The building and land cost \$54,000. The Boston asylum and farm school for the relief and instruction of poor boys destitute of proper control, is on Thompson's island, in the harbor. It has been very useful. At the last session of the legislature, the city was authorized to establish and maintain a free hospital for the reception of persons who, through poverty or other misfortune, may require relief during temporary illness. The people of no city in the world have exhibited more liberality, both in public and private charities, than those of Boston.—The number of churches in Boston, in 1857, was 99, and others are now building. There are 388 physicians, of whom 25 are women. Boston common is a small park, of 48 acres, surrounded by an iron fence, erected in 1836, at a cost of more than \$100,000. It is considered to date from 1634, and by a clause in the city charter it is made the public property forever, and the city cannot sell it, or change its character. The malls are singularly spacious, and are shaded by magnificent trees, some of which were set out considerably more than a century ago. There are nearly 1,800 trees on the common, which are kept in admirable order, at a large annual expense. The public garden, which was once a portion of the common, is now separated from it by a part of Charles street, but will soon become a place second only to the common itself for beauty and usefulness.—The government of the city is lodged in the mayor, board of aldermen (12), and common council (48). Frederic W. Lincoln, jr., is now mayor; his term of service commenced with the year 1858. He is the 16th mayor. The police force contains 268 men. The fire department consists of a chief engineer and 9 assistants, and 13 companies with engines, with 668 members. There are 21,475 feet of leading hose, 338 of

suction hose, 188 reservoirs, and 1,274 hydrants. A fire-alarm telegraph has been established, having 49 signal stations, and an office in the city building. Number of alarms in 1857, 164; loss, \$258,231; insurance, \$288,785. There are 17 military companies in Boston, beside the "ancient and honorable artillery company," which is the oldest organization of the kind in the United States, dating from 1638, and, with the exception of two regiments in the Austrian service, and some of the English regiments that served on the continent in the early part of the 17th century, there are no older military organizations in the Christian world. There are 3 theatres in Boston. Boston elects 26 members of the state house of representatives, each ward constituting a district, and each district, except 2, electing 2 members—the exceptions electing 3 each. All the wards, except the 2d, form 4 senatorial districts, and each district elects a senator. Ward 2 is a part of the 5th senatorial district mostly made up of the rest of Suffolk county. The basis is legal voters, of whom there were 22,678 in Boston at the census taken in 1857. The 4th congressional district is formed of the second 6 wards of Boston, the city of Roxbury, and the town of Brookline, and the 5th of the first 6 wards, the rest of Suffolk county, and the city of Cambridge.

BOSTON, a seaport town and parliamentary borough of England, in Lincolnshire, 107 miles N. from London, on both sides of the river Witham, 6 miles from the sea. It had in 1851, 14,738 inhabitants within the municipality, 17,518 within the parliamentary boundaries, and is represented by 2 members in parliament. The 2 divisions of the town are connected by an iron bridge, of a single arch, 86½ feet in span, erected in 1804–7, after a design by Rennie. Boston is noted for the neatness of its streets, is lighted by gas, supplied with excellent water from a distance of 14 miles, and built almost entirely of brick, there being no stone quarries in the vicinity. The most remarkable of its edifices is the parish church of St. Botolph, the largest without transepts in the kingdom, built in 1309, and having a tower 282 feet in height, on the plan of that of the cathedral at Antwerp. This tower is surmounted by an octagonal lantern, visible at sea for nearly 40 miles. A window of stained glass has been recently placed in this church as a memorial of the citizens of Boston, in honor of the Rev. John Cotton, who was vicar of St. Botolph's, and afterward first minister of Boston in America. Beneath the window is an inscription in Latin, written by Mr. Edward Everett. There are numerous charitable institutions, a grammar school founded by Philip and Mary in 1554, 3 subscription libraries, and commodious salt-water baths, established in 1830. The manufactures are unimportant, but there is a considerable foreign trade, chiefly with the Baltic, whence timber, iron, hemp, and tar are imported, and large quantities of grain are transported

hence to London. A monastery was founded here in 654, by the Saxon St. Botolph, and destroyed by the Danes in 870; "hence," as Lombard says, "the name of Botolph's town, commonly and corruptly called Boston." During the civil war, Boston was, for a time, the head-quarters of Cromwell's army. Its decline, subsequent to the 16th century, was caused by the prevalence of the plague, to which its low situation particularly exposed it, and by the gradually increasing difficulty of the Witham navigation. Recently the healthiness of the place has been improved by draining the surrounding fens, to an extent of 70,000 acres, and its commercial prosperity has been in some degree restored by great improvements in the channel of the river.—Mr. Pishey Thompson's "History and Antiquities of Boston" appeared in 1856.

BOSTON, THOMAS, a Scottish Presbyterian divine, born at Dunee, March 17, 1676, died May 20, 1732, famous for his ultra-Presbyterian views, and for the strong practical piety of his writings. He is best known by his "Fourfold State." He commenced his ministerial labors as a licentiate in 1697; was ordained minister of Simprin, Sept. 21, 1699, and afterward translated to the parish of Ettrick. In 1708 he was a member of the Presbyterian general assembly. The control of the throne over the Scottish church, which was regarded as merely nominal in point of practical effect, was exercised that year in a somewhat positive and peremptory manner. The royal commissioner, who formally sits in the assembly, dissolved that ecclesiastical body, because it had engaged in some discussions not likely to be palatable to the crown. The moderator conceded the point, and declared an adjournment. This appeared to Boston, and many others, as an unworthy compromise of the dignity of the Scottish establishment, and he violently opposed it. He was also opposed to the oath of abjuration.

BOSWELL, SIR ALEXANDER, eldest son of the biographer of Johnson, born in Scotland, Oct. 9, 1775, died March 27, 1822. Lockhart mentions him as having been one of Scott's most intimate friends, "who had all his father Bozzy's cleverness, good humor and joviality, without one touch of his meaner qualities." In 1821, the leading Tories of Edinburgh raised funds to establish a newspaper called the "Beacon," which was fiercely and offensively personal, and to which Sir Alexander Boswell was a literary contributor. The newspaper was discontinued after 6 months, but in the neighboring city of Glasgow a successor, the "Sentinel," arose out of its ashes, and bitterly kept up the personal enmities of its predecessor. Its conductors quarrelled, and one of them betrayed to the late Mr. James Stuart, of Dunearn (a leading Edinburgh whig), a box of manuscripts which revealed Sir Alexander as "the writer of certain truculent enough pasquinades" (to use Lockhart's words), one among them, which had been published, direct-

ly imputing cowardice to Mr. Stuart. The result was a challenge. Sir Alexander, who had just returned from attending the funeral of his only brother, in London, accepted it, and in the duel which ensued, March 26, 1822, at Auchtermool, in Fifa, he received a wound, of which he died the next day. Mr. Stuart was tried for killing his opponent, and acquitted.

BOSWELL, JAMES, the biographer of Samuel Johnson, born in Edinburgh, Oct. 29, 1740, died in London, June 19, 1796. He studied at the universities of Edinburgh and Glasgow. Early in life, he became a high churchman and a Tory, although his father was a rigid Presbyterian and a whig. At the age of 18, he showed that ambition for intimacy with distinguished men, that love of English society and manners, and that predilection for authorship, which characterized him through life. These tastes were fostered on his first visit to London, in 1760, and it was with difficulty that his father prevailed upon him to give up the notion of going into the guards, and to return to the study of law, which he had previously commenced. After a course of civil law at Utrecht, he travelled through the continent, visiting Voltaire, Rousseau, and other men of note. From Italy he crossed to Corsica, in order to see Gen. Paoli, then fighting for freedom against Genoa. In 1766 he returned to Scotland, where he was admitted to the bar, and soon afterward published a pamphlet concerning the celebrated Douglas cause, which is the sole memorial of his having been a lawyer, with the exception of a pamphlet published in 1774, containing a report of the decisions of the court of session on the question of literary property. He had come home so full of Corsica that he was nicknamed Paoli Boswell, and appeared at a Shakespeare jubilee in the dress of a Corsican chief, with *viva la libertà* in gold letters on his cap, and at another time during the festival, it is said, with "Corsican Boswell" inscribed upon his hat, though this latter circumstance is denied on good authority. His journal of his tour to Corsica appeared in 1768, was praised by Hume, Johnson, Gray, and Walpole, was translated into several languages, and was, in a great measure, the means of obtaining for Gen. Paoli a pension of £2,000, and other honors, when he arrived in London. In 1769, Boswell, after numerous love adventures with ladies of almost every civilized nation, married a cousin, Miss Margaret Montgomery, who died in 1789, leaving him 5 children. In 1768, Boswell made the acquaintance of Dr. Johnson, who liked him so well that he went down to Harwich on purpose to see him off for Utrecht. In 1769, this acquaintance ripened into an intimacy. In 1773, Boswell became a member of the famous Turk-head club, mainly through the influence of Johnson, with whom he made a tour to the Hebrides in the course of the same year, of which both published narratives. Boswell's, which appeared in 1785, soon after his idol's

decease, contains valuable records of Johnson's conversation, and is exceedingly entertaining. Between 1778 and 1785, Boswell only enjoyed such snatches of Johnson's company and conversation as were afforded by occasional visits to London in vacations. These visits were but a dozen in all, and, added to the time spent in the northern journey, make the whole period during which the biographer enjoyed intercourse with his subject only 276 days. But the "Life of Johnson," which was published in 1791, is universally conceded to be the most entertaining biography ever written, and to render its subject better known to us than any other human being who has been more than 70 years in the grave. Having succeeded to his father's estate in 1782, Boswell removed to London in 1786. In 1790 he stood for parliament, but was defeated. In addition to the works already mentioned, he published several political pamphlets and a series of papers in the "London Magazine," entitled the "Hypochondriac," expressive of the feelings of a man subject to a depression of spirits such as was common to himself and to Dr. Johnson. A newly discovered collection of letters purporting to have been written by Boswell was published during the last year in London. The weaknesses of Boswell's character lie on the surface, and were known to himself. An amusing and inordinate egotism and vanity, which showed themselves in his dress, his conversation, and his writings; habits of self-indulgence which hastened his death; mean tastes, such as a love of seeing executions; obsequiousness to great men, which sometimes quenched self-respect, were his worst and most obvious characteristics. But the writer of the best biography extant could not have been the most contemptible of men, and the affection with which he inspired some of the greatest wits of his time, obliges us to believe that there was in him a vein of good sense and good fellowship. He was a disciple of those only who deserved to have disciples. He worshipped real heroes.

BOSWORTH, or MARKET BOSWORTH, a country town of Leicestershire, in England, 11 miles due W. of Leicester; pop. in 1851, 2,449. It is famous for being the scene of the pitched battle of Aug. 22, 1485, which brought to a conclusion the wars of the Roses, and set on the throne of England, in the person of Henry, earl of Richmond, the house of Tudor, in place of the legitimate house of York. The battle was of short duration, though fierce and bloody while it lasted. The army of Richard consisted of between 8,000 and 9,000 men, that of Richmond of about 5,000; and the feudal array of the Stanleys, which they took care to hold at a distance, and independent of either army, until the crisis of the day should declare itself, of about 3,000 more. The vans of both armies, which were separated by a morass lying somewhat to the right of Richmond's array, and covering that flank of his army, consisted of archery; that of the king, commanded by the

duke of Norfolk, headed by the earl of Surrey; that of the earl led by the earl of Oxford, with Sir Gilbert Talbot on his right wing, and Sir John Savage on his left; himself and his uncle, the earl of Pembroke, being in the centre, with a few horsemen, in which the invaders were weak, in reserve. The first assault of the archers, buckling on their helmets, pushing up their plumes, baring their right arms, and bending their puissant bows, is picturesquely described by the old chroniclers. Richard's deep and strong vanguard passed the morass under a cloud of arrows, and fell on the thin and shallow van of Oxford with their terrible bills and battle-axes; and, both sides being equally armed, and men of the same bold and stubborn blood, the battle was fought desperately, hand to hand, with no advantage on either side; the wings of neither party having joined action. At this crisis, Richard, who had a few horse about him, suddenly espying his adversary, whom he rightfully regarded as his personal and wanton enemy, laid his lance in rest, and rode at him at full speed, almost, it would seem, unsupported. The first person who encountered him was Sir William Brandon, Richmond's standard-bearer, and him he transfixed with his lance, in full career, and hurled him dead to the ground. Sir John Cheney next rode at him, a man of great size and strength, and they fought for some seconds hand to hand with their swords; but the slender and low-framed king cut him down, and clove his way onward through the press by dint of sheer blows with the cold steel, until he was within a horse's length of Henry, who was advancing to meet him, when Sir William Stanley broke in, unexpected by the men-at-arms of Richard, on their unguarded flank, and throwing every thing into confusion, separated the rival warriors in time to save the life of Richmond, who it is likely could not have withstood the prowess of a champion like his enemy, who had been literally born in the din of arms, and had been educated from his boyhood amid the perils and horrors of pitched battles, in no less than 12 of which he had been personally engaged. His friends, it seems, rallied about him, rescued him, and, remounting him on a swift light horse, would have conveyed him from the field; but he, closing his visor, and crying that he would there make an end of his battles or of his life, rushed into the thickest of the press, and died, careless to survive his dignity, which he despaired of maintaining, and prodigal of his own blood, as he had shown himself regardless of that of others. His victor was declared king by acclamation of the soldiery, and crowned, on the field, by Lord Stanley with a circlet of precious stones, taken from the bascinet of the fallen king. The corpse of Richard was disgracefully treated, stripped naked, thrown crosswise over a wretched cart, covered with dust and gore, his long hair dragging in the mire, and his head striking against the barriers, as he was borne into

the gates of Leicester, amid the roars of the rabble.

BOSWORTH, JOSEPH, D.D., an Anglo-Saxon lexicographer, born in Derbyshire, England, in 1788; graduated at the university of Aberdeen; mastered the Hebrew, Chaldee, Syriac, and Arabic languages. In 1815 he became curate of Ruddington. He first wrote some pamphlets on the poor laws, and elementary Latin and Greek school-books. In 1823 he published his "Elements of Anglo-Saxon Grammar," which brought him into communication with Grimm, Raak, and other philologists of the continent. His greatest work, the "Dictionary of the Anglo-Saxon Language," was published in London, 1838. It contains an introductory essay on the connection between the various Teutonic and Scandinavian dialects, and the elements of Anglo-Saxon grammar. The equivalents of the vocables are given in English and Latin. His latest work is "King Alfred's Anglo-Saxon version of the History of the World, written in Latin by the Spanish monk Orosius."

BOTANIC GARDENS, establishments for the culture of plants with a view to their study, application, acclimation, and dissemination. Nearness to cities, great variety of situation and of soil, numerous green-houses and hot-houses, beside other things used in common agriculture and horticulture, are required, together with conveniences for all operations with seeds, and for collections of manifold kinds. There is a great diversity in their scope and extent: as witness the gardens of Semiramis; the paradises of Cyrus; the grove on the Orontes; the school-garden of Theophrastus; the poison gardens of Attalus Philometor, and of Mithridates Eupator; the *κῆποι* of Athens; the parks of Lucullus, Mæcenæ, Salust, and of many rich Romans, full of roses and other gorgeous plants; the garden of Antonius Castor, containing rare exotics, visited by Pliny; the *hortulus* of the monk Walafrid Strabus; the palatial gardens of Charlemagne; and the magnificent gardens of the Arabs in Spain. —After a long period of darkness in European civilization, we find the garden of Matthæus Sylvaticus, at Salerno, in 1310. Venice founded a public medical garden in 1333, whose plants were painted by Amadei. The duke Alfonso d'Este founded several with oriental plants. Ercole d'Este established the finest, which he called the Belvedere, on an island of the Po. The nobles of Ferrara followed their example. Padua and Pisa established academic gardens in 1533. Cosmo de' Medici founded one for the university of Pisa in 1544; Ferdinand founded the Florentine garden, and had plants brought from Asia. Bologna, in 1568, and Naples soon after, were similarly endowed. Italy soon declined from the noble pursuit. Rome had 2 botanical gardens, one founded by Cardinal Odoardo Farnese; the other, that of the college Della Sapienza. Messina had 2; one dating from 1689, the other about 1690, founded by the prince Della Cattolica. Every large city

had at least one garden, many of which exist yet, though more attractive from their architecture and picturesqueness than from genuine merit. There are 24 public and 25 private establishments distinguished by various literary and artistic works. The most prominent at present are those of Naples, Florence, Turin, and Milan. The last is of enormous extent, traversed by the river Lambro, and abounds in trees, shrubs, orangeries, and exotic plants. —Conrad Gesner had a garden at Zurich, and wrote a work on those of Germany, in the first half of the 16th century. Out of 10, all of them private, that of Camerarius, of Nuremberg, was the most important. About 1580, a public botanic garden was founded near Leipsic, soon followed by one at Altorf, near Nuremberg; another at St. Wilibald, which was very celebrated; an academic garden at Giessen; another, of the physicians at Nuremberg; others at Halle, Berlin, &c.; so that every university and large city, every potentate, and many rich men, vied with each other in founding botanic gardens, of which about 100 (more than 40 being public) figure in literature. The Viennese garden was directed by Jacquin and Stephan Endlicher. That of Schönbrunn, near Vienna, excels by its extensive hothouses and greenhouses, by exquisite taste in grouping, and by its numberless exotics, especially American tropical plants. Berlin is also rich in hothouses, some being devoted to single tribes of New Holland and south African plants; the conservatory on the Pfaueninsel yields in height only to those at Schönbrunn and St. Petersburg. The gardens of Munich and Nymphenburg excel in palms. Bohemia also has many fine botanic gardens, especially that at Prague, and that of Count Camilla de Canal. In Hungary, the oldest, described garden, 1664, which belonged to the prince primat, at Presburg, exists no longer; that of the university at Pesth was modelled in 1788; and that of Prince Eszterhazy at Kis-Martony, with 70,000 species of plants, is one of the richest known. Poland possesses 3: at Warsaw, founded in 1651, at Cracow, and at Kremenets. Lithuania has 1 at Wilna. In Russia, there is the Demidoff garden at Solikamsk, in Perm, described in 1774; another at Moscow, described by Pallas in 1781, is now destroyed; the academic at Abo, in Finland, which flourished under Tillands, about 1683; that of Count Alex. Razumoffsky, at Gorinka, near Moscow, one of the most important in modern times; and the imperial Pauloffski garden, founded by Alexander I., on Apothecaries' island in the Neva, with very large glass houses, about 7,000 feet long, and some of them 40 feet high in the centre. The garden of Leyden, established in 1577, long surpassed all others in riches; it is now again restored to a high condition under Vries, especially as to Japanese plants. Among the other 7 public and 10 private gardens of the Netherlands, that of George Clifford, at Harderwick, was honored by being reformed

by Linnæus. Of the 8 public and several known private gardens of Belgium, those of the horticultural society at Brussels, and of Lud. van Houtte, at Ghent, are most remarkable. Dutch gardens, though rich and well administered, are mostly atilt in their plans.—England is, however, the country of gardens of all kinds, all of them, except that at Kew, being private establishments, unassisted by the government. In England more than 40,000 phanerogamous plants of all climes are now cultivated. The oldest botanic garden was founded by Queen Elizabeth at Hampton court, continued under Charles II. and William III., and rendered illustrious by Leonard Plukenet, the most active of plant collectors. Among the 10 public and 13 private botanic gardens of the United Kingdom, historically known, the following deserve particular notice: that at Chelsea, founded in 1673, owned by Sir Hans Sloane, for 84 years under the direction of Philip Miller, whom Linnæus called the prince of gardeners; that at Oxford, founded in 1640; the renowned Eltham garden, which belonged to the brothers Sherard; that of Kew, the richest of all in New Holland plants, which are there kept in small hothouses; that of Edinburgh, which abounds in heaths; 2 at Dublin, one belonging to Trinity college, and the other 2 miles distant at Glasnevin, 80 acres in extent, and very picturesque, rich, and well managed. The garden of the London horticultural society, founded in 1821, excels in trees more than any other, and supplies the country with plants; it subjects gardeners to an examination.—In France gardening has never been very flourishing. René Bellay, bishop of Mans, established the first French botanical garden. P. Richier de Bellevall founded one at Montpellier, about 1590. He first mixed soil to suit plants. After many plans and intrigues, continuing from 1626 to 1633, a royal *Jardin des Plantes* was laid out in Paris, under the direction of Guy de la Brosse. It was solemnly inaugurated in 1640, and after being much neglected, it was revived by Colbert, who ordered Robert, the court painter, to paint its rarest plants. Though it could boast of Tournefort, and of 8 of the 5 Jussieus, this garden is surpassed in many particulars by some in England, Germany, and Russia. Of 25 French public gardens, of which about 10 are known in literature, we notice that of J. and V. Robin, at Paris, where plants were cultivated to serve as patterns to court embroiderers, as early as 1590; that of Gaston d'Orléans, at Blois, whose plants were painted on velvet by Robert, under the direction of Robert Morison, afterward professor at Oxford; that of the empress Josephine at Malmaison, the plants of which were drawn by Rédoné, the most skilful of artists in this department. The last 3 exist no longer.—Spain and Portugal, notwithstanding their maritime commerce and riches, have done little for botanic science. Garcias ab Ilorto, however, founded an official garden on Bombay island, about 1563. There are but 2 public gardens in Spain, one at Mad-

rid and one at Barcelona, and, in Portugal, one at Coimbra, worthy of notice. Switzerland has 5 botanic gardens; Denmark 4—that at Copenhagen was founded in 1640; Sweden 5—the oldest, at Upsal (one of the finest establishments of the kind in the world), was catalogued by Rudbeck in 1658, and described by Linnæus in 1745. There are also botanic gardens at Batavia, Bombay, and Calcutta, one of them laid out by Roxburgh, enlarged by Wallich, on Table mountain, at the Cape of Good Hope, at Canton, Hamme near Algiers, Havana, Jamaica, Madras, Mexico, Rio Janeiro, San Jago de Chili, Serampore, Sidney, on the island of Bourbon, Ceylon, Mauritius, Teneriffe, and St. Vincent. In the United States there was one at Elgin, New York, founded by Dr. Hosack in 1801; another at Lexington, Kentucky, catalogued by Rafinesque, 1824. Some attempts have also been made at Cambridge, Mass., Philadelphia, and elsewhere.

BOTANY (Gr. *Boravivn*, from *Borav*, a plant or vegetable) is the science of plants. Theoretic or pure botany is either special, a part of natural history, consisting of horismology, or as it is usually called, terminology, phytography (the description of plants), and taxonomy, or systematology (the laws of arrangement); or it is general, comprising organography (the description of the organs of plants, in relation to their external appearance), and histology (the science of the elementary tissues of the organs), together constituting phytotomy or the anatomy of plants, and with phytochemistry forming the basis of phytophysiology (the science of their vital phenomena), and of phytopathology (the science of their diseases). In ancient times special botany formed the whole science; but general botany comprehends the developments of modern investigation. Practical botany is the application of the science, either to other departments of science, such as medicine, agriculture, and horticulture; or to the industrial arts, such as dyeing, weaving, and the like; or to æsthetics, as in landscape gardening. Important accessory branches of study are found in phytogeography, the science of the distribution of plants over the globe; phytoöryctology, or, as Endlicher calls it, phytohistory, the science of their fossil remains; and the history of botany itself. Man first knew plants only as food for himself and for animals. Instinct and accident taught him to use them as remedies in sickness. The Egyptians also knew the use of aromatic plants in embalming, and even wrote treatises attributing the discovery to Thoth, or Hermes Trismegistus. The Hebrew Scriptures mention about 70 species of plants which can be ascertained, beside others which it is impossible to determine. Several plants are mentioned in the Sanscrit literature. The Greeks attributed the invention both of botany and medicine to Chiron, the wisest of the Centaurs, a pupil of Apollo. Jason, Achilles, and other heroes, and also Medea, were believed to have been skilled in the use of medicinal plants. *Æsculapius* and

the *Asclepiadæ* cured diseases mainly with plants, of which about 200 are mentioned in the works ascribed to Hippocrates of Cos (about 400 B. C.). Herodotus relates that in Babylonia male palms were tied around female ones to make them bear fruit. A century later, Aristotle wrote 2 books on plants, known only from Latin and Arabic versions. Theophrastus, his pupil, wrote 2 great botanic works in 10 books; he divided plants according to their size and consistency, distinguishing about 400 species. Craterus, a rhizotomist, gave more details than Hippocrates. Pedanius Dioscorides (about A. D. 100) treats, though less correctly than Theophrastus, of about 600 species, 150 of which we can determine. The Alexandrian school neglected the natural sciences. Among the Romans, O. Valgus, the brothers Musa and Euphorbus, Æm. Macer, Jul. Bassus, and Niger, most of whom were physicians, left some botanical observations; M. P. Oato, the learned M. T. Varro, and the diligent compiler, L. J. M. Columella, wrote on agriculture with allusions to botany; and Virgil's *Georgics* must also be mentioned. Pliny the Elder devoted to botany 16 books of his *Historia Naturalis*, 8 on the science in general, and 8 on botanical medicines, describing almost 1,000 plants, many of which are now undeterminable; his method, however, is inferior to that of Theophrastus. Galen wrote on *materia medica*; Oribasius copied him; Paul. Ægineta, about A. D. 650, gave a mere collection of botanical names. The Arabs not only preserved many ancient authors, but added to the 1,200 species known before the 9th century, about 200 oriental plants, mostly officinal and aromatic. Wahab and Abuseid visited China, and described the tea or tea plant. Ali Masudi, Edrisi, Alvardi, Abulfeda, Batuta, all geographers and travellers, also treated of plants. Abu Zachariah ebn Alos wrote a very learned work on rural subjects. Ebn Belthar is the most learned Arabian botanist, having travelled through most eastern countries for the purpose of studying plants. Abubeker Mehemed Rhazi, a physician at Bagdad; Ebn Sina (Avicenna), Abul Fadli, Joh. Serapion, Averroes, and Mesueh, also enriched the science. Meanwhile the thickest darkness covered all the rest of Europe, till in 1453 Constantinople fell into the power of the Osmanlis, and the hidden Greek literary treasures were dispersed over Italy first. Then arose (1450-1550) a host of translators, commentators, and copyists of the ancients, such as Ermolao Barbaro, Georg. Valla, Marc. Virgilio, Nicol. Leonicoenus, Giov. Monardi, Ant. Brasavola, Jean Ruel, and others, who added but little of their own to the inheritance of about 1,400 species of plants known to botany. Botanic gardens then began to be founded. Printing (1486), woodcuts, paper, and other recent inventions, hastened the revival. In Germany, Otto Brunfels first published good woodcuts of living plants in 1530; for those in the work incorrectly attributed to Æm. Macer (1480), and even in that of Peter de Crescentius,

are all of inferior value. Hieron. Bock (*Tragus*) discovered some plants. Euric. Cordus, and his son Valerius, visited Italy, commented on Dioscorides and other Greeks, and promoted the science. Leonh. Fuchsius first attempted an arrangement of all known plants, illustrating them with good figures and descriptions. P. Andr. Mattioli, physician of the emperor of Germany; Auger. Gislén. Busbequius, imperial ambassador at the Sublime Porte, and Dodoens Rembert, professor at Leyden, discovered, collected, and described many new species. Ranwolf travelled in Asia Minor, Persia, &c., and sent many plants to the European gardens. Prosp. Alpini, Venetian consul at Cairo, and Melch. Gullandinus, examined Egypt. The discovery of America in 1492, and the doubling of the cape of Good Hope in 1498, opened to botanical science extensive new regions. Garcias ab Horto founded a botanic garden at Bombay. Chr. Acosta, Nic. Monardes, Fr. Hernandez, and other Spaniards, Portuguese, and Frenchmen, explored the newly discovered East and West. Conrad Gesner of Zürich (1516-'65), a great cultivator of the natural sciences, promoted botany by establishing genera from the flower and fruit, and by approaching toward a natural classification. The tables of his great work, containing many new plants, were published by Joach. Camerarius, in a synopsis of Mattioli's commentary, in 1586. Charles de l'Ecluse (*Clusius*) visited Hungary and other countries of southern Europe, became director of the imperial garden at Vienna, and described accurately and elegantly many new plants; he wrote on aromatics, and was a martyr to his zeal; he was the best botanist up to his epoch (1526-1609). Lobelius of Lille (1538-1616) drew well the rudiments of several natural families (1570); he was the first to distinguish monocotyledonous from dicotyledonous plants, taking into account characteristics of a more definite nature than those employed by his predecessors. Andr. Cæsalpinus of Arezzo, an Aristotelian (born in 1519), established the first memorable system from fructification, divided trees according to the direction of the germ, made a better distinction in the sex of diœcious plants (giving masculine names to staminate, feminine ones to pistillate individuals), and first analyzed several of the important organs of vegetation. Most distinguished among other botanists of that time are: Jac. Dalechamp; Jac. Theod. Tabernæmontanus, who reproduced the figures of more than 8,000 plants which had been described before him; Joach. Camerarius, who travelled in Italy, and sent his nephew, Joach. Jungermann, on a botanical journey to the East; Fab. Colonna, a good observer, who first published delicate copperplates of plants; Basil Besler, who divided plants by the color of the flowers; Ad. Zaluzyanski, a Bohemian, who wrote on the sexes of plants, and exactly described the floral organs. All of these made discoveries of new plants. The 2 brothers Bauhin, of Basel,

contributed much to the progress of botany. John, born in 1541, a pupil of Fuchsius, laid out the garden of the duke of Württemberg at Mumpelgard, wrote a universal history of plants, describing more than 5,000 species, illustrated by 3,577 figures, distributed them into trees and herbs, and subdivided them according to their habits, but less precisely than Cæsalpinus. Gasp. Bauhin, born in 1560, tried to reform the confused synonymy of the 6,000 species then known, denoted each species by a phrase expressive of its characteristics, and collected (though not strictly) all species into genera. His method, together with that of Cæsalpinus, was used for the determination of plants until the introduction of Linnaeus's system. During the wars that distracted Germany, France, England, &c., there was a lull in all scientific pursuits. Marggraf described the vegetable riches of Brazil; others those of the Dutch colonies. The invention of the microscope by Leeuwenhoek (1682-1723), who examined the evolution of seeds, opened another vista into the secrets of nature. Robert Hooke examined the cellular tissue and the organs of mosses. Nehemiah Grew, born in 1658, an eminent anatomist of all organic bodies, published in 1682 an anatomy of plants, full of ingenious observations; he describes vegetable cellulose matter, especially the pith, the cortical pores, and many other important subjects. Marcello Malpighi, though born in 1628, before Grew, whom he preceded also in the publication of his works, is posterior to the Englishman as to phytotomic discoveries. He observed, by using the microscope and maceration, the innermost vegetable as well as animal tissues, seeds, and their germination; erring, however, in the belief that the tracheæ, or spiral vessels, serve for respiration, and that the vegetable vessels are analogous to animal veins. He and Grew are the founders of phytophysiology. Several members of the French academy of sciences made further discoveries, as Reneaulme on the leaves as organs of transpiration, absorption, and nutrition; Cl. Perrault on the movement of the sap; Den. Dodart on the direction of growth; Lahire on the growth of trees. Experiments on the nutrition of plants were made by Vaa. Helmont and John Woodward; on the movement of liquids by Ed. Hariotte. The system of Cæsalpinus was superseded by Rob. Morison, (born at Aberdeen in 1620, director of the garden at Blois, a friend of Robin, and finally professor at Oxford), who wrote a universal history of plants, divided the umbelliferæ more accurately, and devised a method of distribution according to fructification. Jac. Bobart imitated that method. John Ray, born in 1628, in Essexshire, had a clear conception of the true principles of classification, and in his *Historia Plantarum* laid the foundation of the views developed by Jussieu, for his first division is identical with that of the Frenchman, viz.: into flowerless or imperfect, and flowering or perfect plants. The latter he subdivided into

monocotyledons and dicotyledons, and still further, according to imperfect or perfect flowers and fruit. His method was perfected by Christoph Knaut, of Halle, who, however, inverted its sequence, by proceeding from the fruit to the flower. Artificial methods were arranged, by P. Hermann from the fruit; by Rivinus, in 1690, from the corolla; by the Jesuit Kamel, in 1693, from the fruit; by Magnol, in 1720, from the position of the calyx and corolla. J. P. Pitton, who was also named Tournefort (1656-1708), travelled in southern Europe and western Asia, collected a fine herbarium, and left a method of arrangement, in which the plants are divided into herbs and shrubs (subdivided into flowering, flowerless, and both flowerless and fruitless; the first again 5 times subdivided), and into trees, which he twice subdivided as to the flower; the whole comprising 22 natural groups, distributed into genera and species. A poor physiologist, he scorned the idea of sexes. His method was improved by P. A. Micheli, a sagacious cryptogamist, who discovered the internal corolla of grasses; and also by Guiart. Boerhaave tried to combine Ray's and Tournefort's views; Pontedera those of Rivinus and Tournefort. Dillenius, who described the garden of the brothers Sherard, at Eltham, laid the foundation for the study of cryptogamous plants in 1717. Charles Plumier published, from his own observations, a catalogue of 110 new genera of American plants (especially of the Antilles) in 1703, and a treatise on ferns. Cryptogamology was further improved by the Transylvanian, J. Hedwig. L. Feuillée travelled in Asia in 1690, and in America in 1705, and A. Fr. Frézier in Spanish America; both enriching botany with new plants.—A gigantic step was taken in phytology by Charles Linnaeus, born in 1707, who, undaunted by extreme poverty, had acquired such information as to become associated with Olaus Celsius, a writer on biblical plants, in his botanic researches, and soon after a substitute of the learned Rudbeck, in his botanic chair. His *Flora Laponica*, the best of all hitherto published works, was the fruit of an adventurous journey on foot in that dismal region. Troubled by rivals, he betook himself to Holland, where he was well treated, being especially patronized by Clifffort, whose garden, at Harderwick, he reformed and described in 1737. The 8 kingdoms of natural history were reorganized by him in a precise and elegant nomenclature, with specific names instead of vague phrases. After having visited France in 1738, where he made botanic excursions with Antoine and Bernard de Jussieu, although urged to remain, he returned home, and was most honorably treated until his death. We subjoin a key to his sexual system, which has been so identified with the history of botanical science, and has exerted such a marked influence in its development, that a brief explanation of it is necessary to the completeness of this article.

MARRIAGES OF PLANTS.

Generation of plants.

Flourescence.

Puntic, manifest, *phanerogamous*.

Flowers visible.

Monoclinia (*monos*, one, *κλίση*, thalamus, couch).

Males and females on the same thalamus.

Flowers hermaphrodite: stamens and pistils in one flower.

Dignity (no affinity).

Males not cognate.

Stamens altogether unconnected with each other.

Indifferentium (no subordination of males).

Stamens of indeterminate length.

- | | | |
|-----------------|-------------------|-----------------------------|
| 1. <i>Mon-</i> | 8. <i>Oct-</i> | } <i>-andria</i> (manhood). |
| 2. <i>Di-</i> | 9. <i>Enne-</i> | |
| 3. <i>Tri-</i> | 10. <i>Dec-</i> | |
| 4. <i>Tetr-</i> | 11. <i>Dodec-</i> | |
| 5. <i>Pent-</i> | 12. <i>Icos-</i> | |
| 6. <i>Hex-</i> | 13. <i>Poly-</i> | |
| 7. <i>Hept-</i> | | |

Subordination (certain males preferred to others).

3 stamens shorter than the others.

14. *Di-* (3) } *-dynamia* (power).15. *Tetra-* (4) }*Affinity*.

Males related and cognate.

Stamens adhering among themselves or with the pistil.

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|--|-----------------------------------|
| 16. <i>Mon-</i> (1) | } <i>-adelpbia</i> (brotherhood). |
| 17. <i>Di-</i> (2) | |
| 18. <i>Poly-</i> (many) | |
| 19. <i>Syngenesia</i> (births together). | |
| 20. <i>Gynandria</i> (wife-manhood). | |

Diadina (*dis*, twice).

Males and females on distinct thalami.

Several males and females in the same species.

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|---------------------------------------|-----------------------------|
| 21. <i>Mon-</i> (1) | } <i>-oeta</i> (household). |
| 22. <i>Di-</i> (2) | |
| 23. <i>Polygamia</i> (many weddings). | |

CLAUDESTRICK, hidden, *cryptogamous*.

Flowers scarcely visible to the naked eye.

24. *Cryptogamia* (secret wedding).

The number of classes coincides with that of the stamens up to the 11th class, which has 12 stamens. The 12th class, *icosandria* (20 stamens), differs from the 13th, *polyandria* (many stamens), not by the number, but by the insertion of the stamens, which is on the inner side of the calyx in the former, and on the receptacle in the latter. *Didynamia* has 4, *tetradynamia* 6 stamens, of which 2 are shorter in each class. In the *monadelphica*, the brother-husband, they arise from one basis, in *diadelphica* from a double one, in *polyadelphica* from many. In *syngenesia* the stamens cohere by the anthers (rarely by the filaments) in a hollow cylinder. In *gynandria* the stamens sit on the pistils (not on the receptacle). *Monoclia*, males with females in the same plant, but on distinct thalami; in *dioclia*, they are on distinct plants; *polygamia*, males with females, on one thalamus, while they are also on distinct thalami in one species.—The orders are taken from the pistils (1st to 13th class), thus: *mono-*, *di-*, &c. *gynia*; in the 14th from the fruit: *gynno-* (naked) and *angio-* (covered) *sperma* (seeds); so in the 15th, *siliquosa* (poddied) and *siliculosa* (with podlets). In the 16th, 17th, 18th, 20th, 21st, and 22d classes, orders are denominated from the number of the stamina (in the 16th, 17th, 18th, 20th, from *diandria* upward; in the 21st and 22d from *monandria*). The 19th class contains mostly compound flowers, and the orders are called *polygamia*: *Polygamia aequalis*, florets all hermaphrodite, and of similar form; *P. superflua*, flower ra-

diata, disk with hermaphrodite florets, ray with fertile ones; *P. frustranea*, disk with fertile hermaphrodite florets, ray with barren females; *P. necessaria*, disk with barren hermaphrodite florets, ray with fertile female florets; *P. segregata*, beside common perianth, each floret with its own calyx. *Monogamia* is an order of not compound plants. Beside the orders of the 21st and 22d classes, from stamens, there are 2 orders, *monadelphica* and *syngenesia*, and the last order of both classes is *gynandria*, because in the males a production resembling a style bears the stamens. In the 23d class the orders are *mono-*, *di-*, *tri-* *oeta*. The last class has the following 4 orders: *filices* (ferns); *musci* (mosses); *alga* (seaweeds); *fungi* (mushrooms), &c. The number of the Linnæan classes has been reduced by some to 21 by cancelling *dodecandria*, *polyadelphica*, and *polygamia*. His system contains 7,800 species in the first edition, and 8,800 in the second. In his *Philosophia botanica*, 1751 (where he says that the natural method "*finis est et erit botanica*," that "all plants show affinity both ways, like a country on a map," and whose fragments were published by his pupil Gisecke), Linnæus proposes 67 certain, and 1 vague, fragments of natural groups (reduced later to 58 certain and 1 miscellaneous). The testimony of Herodotus on the sexes of palms, Zaluzianski's description of floral organs, Thomas Millington's (1676) and Bobart's observations on the fertilizing power of anthers, Grew's assertion of the same power, Rud. Jac. Camerarius's demonstration (1694) of the same, Bocccone's experiments with palms (1697), Ray's assertion of the theory of sexes, Jo. H. Burckhard's letter to Leibnitz (1702), proposing an arrangement of plants by sexes, Seb. Vaillant's (1727) work on the sexes, &c., led Linnæus to the development and systematic application of the sexual theory to all plants. Not content with his own knowledge, he labored most zealously to extend the science of Flora by sending her apostles, at the expense of the Swedish treasury, to all parts of the globe. Solander thus explored Lapland, Archangel, &c., and circumnavigated the globe with Cook and Banks; Peter Kalm explored Finland and N. America; Peter Loefling, Portugal, Spain, and New Spain; Hasselquist, Asia; P. Forskal, Arabia; Ternstroem, the East Indies; Osbeck, China; Rolander, Surinam; others, several provinces of Sweden and European countries. The system of Linnæus was repudiated by Buffon, Alb. Haller (who distinguished plants by numbers and a phrase), Adanson, Alston, Bern. de Jussieu, and C. G. Ludwig. Its excellence was demonstrated by J. K. Koelreuter; it was improved by K. Sprengel—in the lower families, by L. O. Schmidel and J. Hedwig; enriched with new plants by Ch. F. Persoon, K. L. Willdenow, M. Wahl, J. J. Römer, and J. A. Schultes; and modified by Mérat, Richard, and others.—Contemporaneously with the activity of Linnæus and his many followers, other votaries of the science extended its domain with

much zeal and success. John Burmann (1707-'80), and his son, Nichol. Lawrence, collected and described almost 1,500 new species from the East Indies, Ceylon, and Africa, which they had received from travellers. John Commelin, and his son, Gaspar, published the *Hortus Malabaricus* of the governor, Van Rheede Draakensteen. John Chr. Buxbaum (1694-1730) discovered and described many Russian species of plants. New botanic gardens were founded, and old ones improved, in proportion to the increase of newly found plants, and of clearer views of their nature. Jos. Gaertner published an admirable *Carpologia* (treatise on fruit) in 1768, which was but little improved by L. C. Richard and others. The constellation of the Jussieus had risen in Lyons, with Antoine (1686-1758), successor of Tournefort in the Paris museum of natural history, and editor of his *Institutiones Rei Herbariæ* (1694). His brother Bernard (1699-1776), inspector of the royal garden of the Trianon, elaborated a system based upon the seed, which was developed by his nephew. The other brother, Joseph (1704-'79), travelled alone through the Andes to the sources of La Plata, and having been forced to work at the building of a bridge at Lima, became deranged, and died at Paris. But the star of the first magnitude is their nephew, Antoine Laurent (1748-1836), professor in the museum, chancellor of the university of Paris, &c., who published the *Genera Plantarum secundum Ordines naturales disposita* (Paris, 1789), a work containing almost 20,000 species, and celebrated alike as a monument of wonderful sagacity and of the profoundest research, and for the elegance and precision of its style. J. B. de Lamarck, St. P. Ventenat, L. C. Richard, J. G. K. Batsch, L. Trattinnick, &c., modified this prototype of all subsequent natural systems, of which a short synopsis will follow. The 5th, Adrien Henri Laur. de Jussieu, son of the last named (born at Paris, 1797), professor at the museum, wrote on the *Euphorbia* and *Malpighiaceæ*, on Chilian and (with N. Hilaire and Cambessades) on Brazilian plants. Beside the methods of classification already spoken of, J. Jung, Boerhaave, Waehleendorf, Adanson, Oeder, Cranz, Scopoli, and Batsch, had made different arrangements before that of A. L. Jussieu in 1789.—We will now take a rapid survey of the natural systems elaborated since that time. Jussieu applies the primary divisions of Ray to the method of Tournefort (1694), and uses for subdivisions the positions of the stamens with respect to the ovary. Of his 15 classes there are 1 of acotyledons, 8 of monocotyledons, and 11 of dicotyledons; and all are distributed into 100 orders. Robert Brown, a precise observer, follows (1810) these orders, changing their sequence, considering the classes often artificial, and pointing out the importance of æstivation for the natural orders. A. P. de Candolle's scheme (1813), in 9 series, is easy and simple, but a mere scaffolding. In 1819 he made new groups of alliances under the name of cohorts.

In his view plants are either vascular, cotyledonous (exogens, dicotyledonous, containing *thalamiflora*, *caliciflora*, *corolliflora*, which are all dichlamyda, and the collection of monochlamyda, or endogens, monocotyledonous, comprising phanerogams and cryptogams), or cellular, acotyledonous (leafy or leafless), all in 161 orders. His *Prodomus*, an admirable description of genera, is most used in France. He also established 16 rather loose classes of plants, according to their locality, such as sea, water, marsh, and meadow plants, &c. His son broke up the cohorts in 1844, and altered the succession of the orders in the former system. O. von Agardh, a Swede (1825), groups orders into classes, after the example of Batsch, with 9 primary divisions; relying on fructification, but more on affinity than on characters. O. J. Perleb proposed, in 1826, an arrangement, which he carried out in 1838, in 9 classes, with 48 groups or alliances, with the primary division of De Candolle; in all 432 orders, in which 830 natural families occur; he does not specify genera under them. B. C. Dumortier, without accounting for his principles, gives 8 classes: *staminacia* in 18 orders, *pollinacia* in 4 orders, and *fluidaciu* in 3 orders. Reichenbach published his natural philosophical system in 1828. Fr. Th. Bartling (1830) has, under the De Candollian primary division, 60 classes with 245 orders, paying especial attention to the seed. John Lindley began in 1830 with a slight modification of De Candolle, making 2 classes in 7 tribes, without minor groups or alliances; then imitating (1838) Agardh and Bartling, he reduced the orders into groups called *nizus* (tendencies), and made some modifications. Following almost the same arrangement, he attempted in 1836 a reform in nomenclature; modifying his views on exogens, he formed an albuminous group, and subdivided those with little or no albumen into the epigynous, polycarpous, dicarpous, and diclinous groups (1838); then he made 8 classes, of which 6 in the sexual state, and 2 in the asexual (1839); and, finally, he reached his 6th arrangement in the "Vegetable Kingdom" (1845, 3d edition, 1853), which he divides into 2 states, viz.: the asexual or flowerless plants, containing 2 classes (*thallogens* and *acrogens*, each with 3 alliances), and the sexual state or flowering plants, comprising 5 classes (*rhizogens* or one alliance, *endogens* with 11 alliances, *dictyogens* or one alliance, *gymnogens* or one alliance, and *exogens* in 39 alliances). He counts 56 alliances, but when we add the 3 classes in single alliances, we count 59, ultimately divided into 303 orders. If we wish to understand the reciprocal influence of the views of each author, we must examine the chronological sequence of their books; for thus we shall see that during these metamorphoses of Lindley's efforts in classification, the works named below have been published, which he of course has made use of. J. Hess (1832) imitates De Candolle, attempts no higher groups, and gives families *seriatim*. O. H.

Schultz (1882) resembles De Candolle, has 2 primary divisions, viz.: *homorgana* in 4 classes, and *heterorgana* (subdivided into *synorgana* and *dichorgana*) in 11 classes, based upon florification. P. Horaninow (1884) divides the organic world into 4 kingdoms, vegetable, phytozoic, animal, and man, and in his *Tetractys Naturæ* (1848) separates plants into 4 circles by fructification, and suffices *astra* to the names of his orders (as, for instance, *rutastra*, instead of *rutaceæ*). The Swede, Elias Fries (1885), ranks germination highest, fructification lowest, and has 8 classes (*dicotyledons*, *monocotyledons*, and *nemea*, or cryptogams) with 20 sub-classes, containing about 95 orders. O. F. Ph. von Martius goes by fruit (1885), invents new terms, and has 2 provinces, viz.: primitive vegetation (in 4 classes, subdivided into sub-classes, then series, cohorts, and lastly orders) and secondary vegetation, consisting of fungi alone. Sir E. F. Bromhead (1836 to 1840) proceeds by induction to establish a continuous series of alliances, in 2 parallel series (one of algæ, the other of fungi), meeting in the cytinales alliance (Lindley's rhizogæus), and having at equal distances in each series analogous alliances to the number of 86 in each (beside the common one of cytinales), in a quasi circular, or rather spiral figure. Stephan Endlicher (*Genera Plantarum secundum Ordines naturales disposita*, Vindob., 1836-'40) has published the most important systematic work since A. L. de Jussieu's of 1789. His classes answer to Lindley's alliances. We subjoin a summary of his method, from his *Conspectus diagnosticus*:

Two regions contain all plants: 1. *Thallophyta* (Gr. θαλαύ, to pullulate, to green, grow, bloom, sprout; the *thalus* being either a leafy branched tuft or frond, or a flat-bellied mass of green matter upon the ground, a bed of fibres; and 2. *Cormophyta* (Gr. κορμος, Lat. corpus, truncus, stem, stalk; the *cormus* being the *leues* of Du Petit-Thouars, *plateau* of De Candolle, *bulbocuber* of Ker, and so called *bulbus solidus* of others; in short, a stem, whether subterranean or superterranean). The *thallophyta* (having no opposition of stem and root, no spiral vessels nor sexes, but spores lengthened in all directions) he divides into two sections, viz.: 1. *Protophyta* (πρωτος, first), born without soil, feeding by the surface, fructification vague; containing 2 classes, namely, *algæ* in 7 orders and 123 genera, and *Uchænes* in 4 orders and 57 genera. 2. *Heterophyta* (ἕτερος, posterior, later), born on languid or dead organisms, feeding from within, developing all organs at once, perishing definitively; constituting 1 class, *fungi*; birth hidden; sporidianone or within *asci* (*bubules*); in 5 orders, 274 genera. In this region there are 16 orders and 458 genera. The *cormophyta* (having polar opposition of stem to root; vessels and distinct sexes in the more perfect individuals) he divides into 8 sections. The 1st section is *acrobrya* (ἀκρος, uppermost, highest, extreme, and βρύω, to germinate, emanate, be bred): stem growing only at the top, lower part only food-bearing; comprising 8 cohorts, namely: 1. *Anophyta* (ἀνω, upward): no vessels; hermaphrodite; spores free within sporangia; with 3 classes, *hepaticeæ*, in 6 orders and 30 genera, and *musci*, in 3 orders and 26 genera; 2. *Protophyta*: bundles of vessels more or less perfect; no male sex; spores free within sporangia of one or more lodges; 5 classes: *a. equisetæ* (horsetails), in 1 order, 2 genera; *b. Alices* (ferns), 7 orders, 72 genera; *c. hydropterides* (water-wings), in 3 orders, 29 genera; *d. selaginæ*, in 8 orders, 11 genera; *e. samitis*, 1 order, *cyadaceæ*, 10 genera; 3. *Heterophyta*: both sexes perfect; seeds without embryo, many-spored; parasitic, with 1 class, *rhizantheæ* (root-flowering), in 8 orders and 14 genera. The 2d section is *amphibrya*: stalk growing peripherally; with 11 classes, viz.: *a. plumaceæ*, in 9 orders, *graminææ*, grasses, 229 genera, and *cyperaceæ*, sedges, 47 genera; *b. enantioblastæ* (ἐναντιος, against, βλαστός, germ), in 6

orders, 33 genera; *c. heloblastæ* (ἑλος, pool, marsh, βίος, life), in 3 orders, 10 genera; *d. coronaria* (from the corolline perigonium), in 6 orders, 43 genera; *e. arctothiceæ* (ἀρτος, bread, ῥίζα, root), in 2 orders, 17 genera; *f. ensata* (Lat. ensa, sword), in 7 orders, 110 genera; *g. gynandria* (female with male), in 3 orders, 805 genera; *h. ectamineæ* (Lat. scotamina, dainties), in 3 orders, 88 genera; *i. fusatales*, in 1 order, *natadeæ*, 6 genera; *j. spadiceflora*, in 8 orders, 51 genera; and *k. princeps*, in 1 order, *palmææ*, 63 genera. The 3d section is the *acramphibrya*: stem growing both at top and peripherally; divided into 4 cohorts: 1. *Gymnospermæ*: ovals naked, fertilized immediately through the open fruit-leaf or permeable disk, with 1 class, *conifera*, in 4 orders, 28 genera; 2. *Apetala*: no perigonium, or a rudimentary or simple one, calycine or colored, free or adhering to the ovary; with 6 classes: *a. piperitæ*, in 3 orders, 28 genera; *b. aquaticeæ*, in 8 orders, 10 genera; *c. fulciflora* (Lat. fulvus, catkin), in 15 orders and 1 sub-order, 79 genera; *d. olivaceæ* (Lat. olivæ, a kitchen-plant), in 4 orders, 60 genera; *e. thymaleæ* (θύμη, altar, flour), in 9 orders, 145 genera; *f. septentaria*, in 3 orders, 8 genera; 3. *Gamopetala*: perigonium double, exterior calycine, interior corolline, gamopetalic, seldom abortive; with 10 classes: *a. plumbagineæ* (Lat. plumbum, a disorder in the eyes, which some species were believed to cure), in 3 orders, 10 genera; *b. aggregatæ*, in 3 orders, 859 genera; *c. campanulinceæ*, in 5 orders, 59 genera; *d. caprifolia* (from climbing like a goat, Lat. capra), in 3 orders, 246 genera; *e. contorta* (twisted), in 7 orders, 227 genera; *f. nuculifera*, in 8 orders, 219 genera; *g. subuliflora*, in 5 orders, 90 genera; *h. personata* (masked), in 7 orders, 818 genera; *i. pelulantha*, in 4 orders, 70 genera; *j. bicorneæ*, in 3 orders, 89 genera; 4. *Dialypetala* (διαλυειν, to dissolve, separate): perigonium double, outer calycine (with leaflets distinct or coalesced, free or connate with ovary, sometimes colored), inner corolline (parts distinct or seldom united by base of stamens, hypo-, peri-, or epigynous), sometimes abortive; with 23 classes, viz.: *a. discanthæ* (disk-flowering), in 7 orders, 252 genera; *b. corniculata*, in 8 orders, 77 genera; *c. polycaurpiceæ* (many-fruited), in 8 orders, 183 genera; *d. rhacadeæ* (ρακία, pomegranate, here misapplied), in 5 orders, 201 genera; *e. nelumbia* (Cingalese, nelumbo, water-lily), in 8 orders and 1 sub-order, 10 genera; *f. parietales*, in 18 orders, 94 genera; *g. pepomifera*, in 3 orders, 88 genera; *h. opuntia*, in 1 order, *cactææ*, 9 genera; *i. caryophyllinceæ* (καρυον walnut, and φάλλω, leaf, from the appearance of the flower-buds of pinks), in 4 orders, 108 genera; *j. columbifera*, in 4 orders, 136 genera; *k. guttifera*, in 9 orders, 83 genera; *l. asperides* (rock-rose, more fragrant in the evening, ἰσπεος), in 5 orders, 78 genera; *m. acera* (maples), in 5 orders, 86 genera; *n. polygalinæ* (γάλα, milk, believed to favor milk-secretion when fed upon), in 3 orders, 16 genera; *o. frangulaceæ*, in 7 orders, 100 genera; *p. tricoceæ*, in 8 orders, 139 genera; *q. isorobintheæ*, in 10 orders, 156 genera; *r. gruinææ* (like crane-bills), in 6 orders, 23 genera; *s. calyciflora*, in 8 orders, 103 genera; *t. myrtiflora*, in 3 orders, 173 genera; *u. rosiflora*, in 5 orders, 77 genera; *v. leguminosæ*, in 3 orders, 421 genera. An appendix of 57 doubtful and of 68 not yet described genera, with a supplement, follows the above-described system, which contains 61 classes in 277 orders and 6,583 genera. Adding the doubtful and not described, we arrive at 6,533 genera (in 1840), estimated at 8,935 by J. Lindley in 1858, comprising 92,930 species; so that we are not far from the mark in taking the round numbers of 10,000 genera, with 100,000 species, more or less known at the present time.

Thomas Baskerville (1839) made some good remarks on the supposed superiority of some plants over others; when, in reality, every one is perfectly fitted for its place in the series of being. E. Chr. Trautvetter (1841), more of a philosopher than of a botanist, studies plants in the spirit of the ancients, and divides them into semi-plants (subdivided into *faci*, hives, acotyledons; and *trunculi*, stalks, monocotyledons), and genuine plants (subdivided into herbs and trees). L. Oken (1810 and later), in his *Lehrbuch der Naturphilosophie*, arranges plants according to a correspondence with the animal kingdom and the bodies of animals. Adolphe Brongniart enumerates the genera of plants cultivated at the museum of natural history in Paris (1843); abandons Jussieu's *apetala*; insists upon the impracticability of a lineal arrangement; puts very high value on the various

kinds of albumen; has 2 chief divisions, *cryptogama* (branching into *amphigena* and *acrogena*), and *phanerogama* (branching into *mono-* and *dicotyledones*); in all 68 classes, with 249 certain and 27 vague orders. O. F. Meisner's *Plantarum Vascularium Genera, &c.* (1848), is a large and useful work, whose beginning is inconsistent with the great bulk of what follows. He intended to follow De Candolle, and makes 47 classes of vascular (dicotyledonous and monocotyledonous) plants, in 268 certain and 7 vague orders. Adrien de Jussieu's *Cours élémentaire d'histoire naturelle* (1844) is a little work, with an analysis of characters; the arrangement, however, is artificial, for the purpose of finding a plant easily. Lindley also gives an artificial analysis of the natural orders, on pages 801-810 of his "Vegetable Kingdom." K. J. Kunth (1847) imitates the principal division of Endlicher, but makes subdivisions especially according to the floral organs.—Some of the most distinguished botanic travellers are: M. Adanson on the Senegal, Ch. P. Thunberg (successor of Linnaeus) on the cape of Good Hope, Kaempfer in Japan, Ruiz and Pavon in Chili and Peru, Mutis in equatorial America, Jacquin in South America, Swartz in the Antilles, Aublet in Guiana, Jac. Loureiro in Cochinchina, Commerson almost all over the globe, Roxburgh in Bengal, Desfontaines in Algeria, Masson at the cape of Good Hope, Le Dru and Riedel around the globe, Labillardière and Ventenat in Oceania (the former also in Van Diemen's Land and New Caledonia), Du Petit Thouars in Madagascar, A. Michaux in North America, Alex. von Humboldt and Aimé Bonpland in South America, Rob. Brown, with the painter Bauer, in Australia, Ehrenberg in Egypt, Abyssinia, Dongola and Arabia (where he collected 47,000 specimens), Lesson in Oceania, Baron Hügel in the East Indies and Oceania, Russegger in Syria, Cordofan in littoral Arabia, J. D. Hooker in Polynesia and the South sea, Lechenault de la Tour twice in Hindostan, Griffith in India and Bootan, V. Jacquemont in East-India, Siebold 7 years in Japan, Ed. Rüppel and Schimper in Nubia and Abyssinia; Otto in the Cordilleras, on the Orinoco, and in North America; Riedel, Aug. de St. Hilaire, Spix and Martius, Moritz, G. Gardner in Brazil and Guiana; Schomburgk in Guiana and Louisiana, Nuttall in the United States, Tweedie on the pampas in Buenos Ayres, Jo. Frazer and Thomas Drummond in the United States, Bertero and Cl. Gay in Chili, Allan Cunningham in New Zealand and New Holland, M. Chamisso in Oceania and around the globe, Meyen around the globe, which O. Gaudichaud circumnavigated 3 times with Freycinet. The empire of Russia was examined by S. Pallas in the south; by Baer in Nova Zembla; by Dr. Schrenck in Samoyed; by Ruprecht and Savilew in the polar regions; by Fred. Parrot in the southern regions which had not been visited by Pallas; by Ehrenberg (with Alex. von Humboldt and Rose) in parts of Siberia not visited by Gmelin and Pallas.

The flora of Asiatic Russia also owes much to the labors of Ledebour.—Among the remarkable floras, or works exhibiting the plants of various countries, the following may be mentioned: *Flora Suecica* (1647), by Magnus Nicol. Celsius; *F. Laponica*, by O. Linnaeus; *F. Halensis*, by Jo. O. Buxbaum; *F. Indica*, by N. L. Burmann (1768); *F. Carniolica*, by Scopoli; *F. Anglia*, by Hudson (1762); *F. Londinensis*, by Curtis (1774); *F. Scotia*, by Lightfoot (1777); the splendid *Flora Danica* (begun in 1761, at the order of King Frederic V.) by Oeder Müller, M. Vahl, and Hornerman; *F. Austria*, by Jacquin (5 vols., 500 plates); *Russia*, by Pallas; of Piedmont, by Allioni; *L'Herbier de France* (1780-98), by Bulliard; the fine French flora, by De Lamarck and De Candolle, and another by Mutel. Magnificent works are: the *Icones Plantarum rariorum*, by Jacquin, who was patronized by the emperor Francis I.; the *Stirps nova*, by L'Héritier de Brutelle (1784-'5), with plates by the celebrated Redouté, also his *Sertum Anglicanum*; Philip Miller's *Gardener's and Florist's Dictionary*, commenced as early as 1724, the forerunner of Curtis's collection, which began in 1787, and is still continued. The latter is rich in good plates of plants cultivated in the United Kingdom. From coarse woodcuts, the best among which are those of Clusius, Dodoens, C. Bauhin, and Rudbeck, or impressions of plants with printers' ink, in Hoppe's, Sowerby's, Grew's, and other old works, and from mere outline drawings, as in Plumier, Linnaeus, jr., &c., there has been a constant improvement in the artistic representation of plants, which keeps pace with the growth of the science, until we reach the performances of Redouté and his successors. Beside the flora and pictorial representations of plants, and of their parts, mentioned above, almost every province of Europe abounds in many other, often magnificent, literary and artistic displays of its vegetation. The literature of these works is recorded in G. A. Pritzel's *Thesaurus Literaturæ Botanicae omnium Gentium*, 15,000 *Operum recensens* (Leips., 1851). This fruit of the assiduous labor of 8 years comprehends all that is valuable in the works of A. Haller, Linnaeus, Séguier (on the general literature of botany); in those of J. Dryander (on Sir J. Banks's library), in the monographs of Wikstroem (Sweden), Adamski (Poland), Haberk (Hungary), Sternberg (Bohemia), Trautvetter (Russia), in the botanic departments of all great public libraries, and in the private botanic libraries of the emperor of Austria (probably the richest of all, thanks to the efforts of S. Endlicher and Fenzl), of Link, Schechtendal, Kunz, De Candolle, Jussieu, Delessert, B. Webb, Gay, Leveillé, Montagne, Grisebach, &c. Worthy of mention among the oldest herbaria (called also *horti sicci*) are those of Rauwolf, Cassalpinus, Plukenet, Petiver, Tournefort, Linnaeus, Buxbaum, Rumpf, Burmann, Ammann, Parkinson, Feuillée, Commelin, Sloane, and St. Flacourt. Hales's "Vegetable Staticks" (London, 1727), an

excellent work, translated into French by Buffon (1735), is full of most sagacious remarks on the internal structure of plants, although it contains but little on the motion of the nutritive liquids. Together with Malpighi's, Grew's, and Hedwig's works, it inaugurated a new era in natural science. Robert Hooke's "Micrographia" (London, 1667), however, is the first work in which the vegetal cell is noticed. Malpighi (1670) next describes it, leading the phalanx of acute observers, such as Mirbel, Dutrochet, Amici, Moldenhawer, Von Mohl, Unger, &c., to Schleiden, who has best described the primitive utricle, naming it cytoblast or germinating cavity. The Hollander Mulder and the German Schacht are now in the front rank of those who trace all vegetation from the cell-producing cytoblast. The rotation of the cellular sap was first described by Corti in 1772, and afterward better observed by Biot, De la Baise, and later by Fontana, L. O. Treviranus, Meyen, &c.; a similar circulation was named cyclosis, by Cassini, Schultz, Morren, &c. Only the principal observers or experimenters in phytotomic details can here be mentioned, viz.: of organic mucous, Brongniart, Mohl, Valentin; of membrane, Röper and Link; of elementary fibres, Purkinje and Morren; of parenchyma, Gozzi and Mulder; of fibro-cellular tissue, Moldenhawer (1779); of spiral vessels, Kützing, Bischoff, and Oken; on woody tissue, Labillardière, Duhamel (*Physique des arbres*); on laticiferous tissue (cinenchyma), Schultz (1829, which discovery explains the principal phenomena of the motion of the sap or cyclosis, according to the French school, but is denied by Meyen); on the ascension of sap, Sarrabat, Bonnet, and Link; on the epidermis, Kroker and his son (1800); on the bark, Duhamel, Senebier, and Pollini; on cork, Sprengel; on leaves, Bonnet, the Bravais, Steinhil, and T. Hanstein (also on the stem and root, 1848); on floral organs, Dunal; on the anther, Purkinje and Kunth; on the pollen, R. Brown, A. Brongniart, Fritzsche, Griffith, Mohl, Schleiden, and Wimmel; on the ovary, Schykoffsky and Grisebach; on the ovule, R. Brown, Thos. Smith, Turpin de Mirbel, Brongniart, and Treviranus. Since Hedwig, Vaucher, Persoon, Agardh, Nees von Esenbeck, Fries, Viriani, J. Brodie, and other cryptogamists, the finest anatomic observations in this department have been made: on fungi, by Ehrenberg, Leveillé, Montagne, Berkeley, Klotzsch, Tulane, and Pringsheim; in mycology, by Bonorden; on hepaticæ, by Gottsche; on lichens, by G. von Holle, Speerscheider, J. D. W. Bayerhoffer; on algae, by Kützing, Decaisne, Naegeli, Thuret, Derbès, and Cohn.—Phytochemistry dates from the foundation of organic physics by De Saussure, A. von Humboldt, and Gay-Lussac, and especially from the demonstration, in 1804, of the invariable ratio of oxygen to hydrogen in our atmosphere, under all circumstances. Further observations on the variable quantities of carbonic gas, of water, ammonia, hydrogen gas, and sulphuretted hydrogen gas (singly and independ-

ently of each other, and but occasionally present in the atmosphere), together with those on the conditions of the atmospheric air over the seas and over other large bodies of water, as well as on the conditions of all sorts of water, and on the constituent elementary parts of various soils—all these conquests of modern science form the basis on which the chemical properties and phenomena of the vegetable kingdom have been scrutinized. Moreover, since Galileo conquered the Torricellian horror of a vacuum, the reason why the root receives one matter in preference to another must be attributed to affinity of its exterior membrane to the matters which surround it in the soil. Nollet first observed (1748) that 2 different liquid mixtures, separated by a permeable wall, mutually exchange the matters solved in them. Dutrochet named these mutual transits *endosmosis* and *exosmosis* (in-giving and out-going). Chevreul, Liebig, Vierordt, and the clear-headed Jac. Moleschott, with many others, have made many experiments concerning this transudation. On these premises other observations and experiments have become safer and their results more trustworthy than they could have been otherwise. Trinchetti and Vogel studied the reception of inorganic matter by the root. J. Müller, finding fungi and conservæ in the lungs of birds, and others seeing conservæ on goldfishes, frogs, &c., studied the reception of organic substances by plants. The reason of the dry-rot was found to be a fungus (*merulius destructor*). The salts present in the humus were found by Soubeiran and Moleschott to part with their acids, which are sucked in by the roots. The ingenious Dr. Draper, of New York, has made many experiments on the reception of nitrogen and oxygen into plants. Grisebach had long before called attention to the absorption of oxygen by plants at night. Senebier (1788) most conclusively proved, in his *Physiologie végétale*, that the carbonic acid of the atmosphere is an aliment of plants. Priestley, Spallanzani, Ingenhous, De Saussure, Davy, and Draper, have illustrated the exhalation of oxygen in the day, and its reception at night, or even in the shade. Boussingault has made experiments, on the largest scale, on the mutual influence of air, water, earth, and plants. Mulder discovered the proteins, upon which he built a theory of his own, explaining many phenomena of vegetation, although it is now proved that the proteins are not a radical. The cereals were studied by Beccaria; the proportions of the amylaceous bodies in plants (such as cellular matter, inuline, dextrine, the sorts of sugar, mannite, pectine, &c.), by Bérard, Péligot, Braconnot, Eichhof, Payen, and Pereira; oily substances, by Hartig, Mulder, Dondera, Iljenko and Laskowsky, Playfair, Görgéy, and especially by Dumas; wax, by Brodie; the chlorophyl and its modifications, by Berzelius, Girardin, Huber, and Avequin; the ashes of vegetables, by Lévi, Bichon, Richardson, and Herapath. The most delicate discovery in phytochemistry was made by Pasteur,

viz., of a double salt of grape-acid (with natron and ammonia) in 2 kinds of crystals, which yield 2 acids that are distinguishable only by the one refracting solarized light toward the right, the other toward the left, but agreeing perfectly in all other respects. An apparatus for the microscope, to be used with polarized light, was contrived by Boeck, a Norwegian. Biot, Ehrenberg, Schacht, and others, experimented with the polarized ray.—Phytopathology has as yet but a scanty literature: W. Focke, J. Münter, and P. Harting, have written on the potato disease; Von Mohl on the grape disease (1852); on the sleep of plants, we have Hoffmann and Göppert; on parasitic fungi, De Bary and Tulane; on the action of ether and chloroform on plants, F. O. Clemens. The best written treatise on fermentation and the decay of organic matter is by Liebig (2d part of his "Chemistry applied to Agriculture and Physiology," 1846), who defines putrefaction as an intermingling of 2 or more metamorphoses. An admirable work on the metamorphoses of plants was written by Goethe, 1790; and "Aphorisms on Chemical Phytophysiology," by A. von Humboldt, in 1794. On symmetry in the form of plants, we have Chatin and Moquin-Tandon. All great chemists, such as Fourcroy, Vauquelin, Berzelius, Sir H. Davy, Faraday, and Lampadius, &c., treat on the constituent parts of plants. Finally, the following phytomists and phytophysiologists, not mentioned above, also deserve particular notice: Aug. St. Hilaire, Desfontaines, Desvaux, Ch. Gaudichaud, Couvanchel, Becquerel, Macaire-Prinsep, Bory de St. Vincent, Palisot de Beauvois, Thomson, E. Darimont, A. Comparetti, Keith, Rudolphi, Kieser, Meyer, Unger. With regard to the uses of plants, the principal authors are: Dierbach, Fée, Geiger, Guibourt, Von Martius, Nees von Esenbeck, Pereira, Richard, Royle, and especially Stephan Endlicher, in his *Enchiridion*. H. Schacht has written on the textures of commerce; Reisseck on fibrous tissues (1852). J. J. Rousseau contributed much toward popularizing the knowledge of plants. Among ladies who have devoted themselves to botany, it may suffice to mention Mrs. Griffiths, of Devonshire, Eng., who discovered many plants, and Miss Drake, whose drawings are admirable. On the affinities of plants, Arnott, Aug. St. Hilaire, Bennett, Bentham, Cambassades, Decaisne, Von Martius, Miers, and Richard, may be consulted.—We will now give an alphabetical list of natives and foreigners who have promoted the botany of the United States and of British America:

WM. BALDWIN, assisted Elliott in the sketch of the botany of S. C. and Ga.
 BENJ. S. BARTON, professor of botany in Philadelphia, "Collections for an Essay toward a Materia Medica of the U. S.," 1798-1804; "Fragments of the Natural History of Pa.," 1799, fol.; "Progress of Vegetation," 1791; "Elements of Botany," revised, and with additions of British examples, &c., Lond. 1804; *Flora Virginica* (reaching only to the *tetrandria* of Linnaeus, but an enlarged and modified edition of the work of Clayton and Gronovius), Phila., 1812; "Specimen of a Geographic View of Trees," &c., of North America between lat. 71° and 75° (incomplete).

W. P. C. BARTON, "Flora of Philadelphia," within 10 miles around (hasty and inaccurate).
 JOHN BARTRAM collected (about 1780) and sent many plants and seeds to Pet. Collinson and other botanists; established the first botanic garden on the Schuylkill, below Philadelphia, and did very much for natural history.
 WM. BARTRAM travelled in the Carolinas, Georgia, and Florida, and wrote on their soil and productions, 1791-'94.
 L. C. BÉCK contributed toward the botany of Illinois and Missouri (not beyond the monadelphia of Linnaeus); "Botany of the United States north of Virginia," 1833, 2d edition, 1843.
 JACOB BIGELOW, *Flora Bostoniensis*, 1814-'34-'48; "American Medical Botany," 1817-'21, 3 vols., 60 colored plates;—"On the Forwardness of Spring in different parts of the U. S.," 1818.
 W. BINGLEY'S "Useful Knowledge" treats of vegetation in the 8d vol., 1808.
 F. BOOT compared American plants with specimens in the old herbaria now in Europe.
 J. A. BREBETON, *Prodromus Flora Columbianae* (of Washington), 1830.
 BROWN, "List of Plants collected on the Coast of Bahia and Possession-Bay," Lond., 1819; *Chloris Metelliana*, 1823.
 J. BROWNE, *Sylea Americana*, 1833 (does not contain all trees).
 J. CAREY described the carices in A. Gray's "Manual of Botany."
 MARK CATESBY, "Natural History of Carolina, Florida, and the Bahamas," 3 vols. fol., 1743; also *Hortus Brit. Americarum*, treating of trees fit for England (also under the title of *Hortus Europa Americarum*), 1768-7.
 T. CLAYTON, of Virginia, a great botanist, had his discoveries published in the 2d edition of Gronovius (1764).
 CADWALLADER COLDEN wrote *Planta Coldenhamiae*, &c. (near Newburgh, N. Y.), published in the *Acta Soc. Upsal.* 1748. He corresponded assiduously with Gronovius, Linnaeus, Collinson, and all other great botanists of the time. His work does not go beyond the 12th class of Linnaeus. His daughter, wife of the Scotch Dr. Farquhar, described the *Hypericum Virginicum*, made many drawings of plants, was admired by men of science, and left her work, *Flora Novi Eborac.*, to Wangenheim, from whom it came into the hands of Baldinger, and at last into the library of Sir Jos. Banks.
 P. COLLINSON, of London, a friend of Linnaeus, inspired J. Bartram and others with a love of nature; made experiments on *lychnis diacra*, corroborative of those of Loez, concerning the sex of plants.
 J. CORNUOT, a French physician, published a *Cumadensis Plantarum Historia*, Paris, 1683.
 The Abbé CORREA reduced Mühlenberg's genera to Jussieu's system, for his classes at Philadelphia, in 1815.
 H. B. CROOM's monograph on *Sarracenia* appeared in the "Annals of the N. Y. Lyceum," vol. 3.
 M. CUTLER wrote an account of the vegetable productions of New England, 1783, probably the first essay of a scientific description.
 J. DABRY wrote on the vegetable productions of the southern States, and (1841) a "Manual of Botany."
 W. DARLINGTON, an "Essay on the Development of the External Forms of Plants," compiled from Goethe, 1839; as *gramineae*, as important to man; a *Flora*, 1836, and a *Flora Cestria* (of West Chester, Pa.), 1837; on "Agricultural Botany," and "Memorials of J. Bartram, H. Marshall," &c., Phila., 1849.
 DEWEY, on cartography, "Silliman's Journal," vol. VII.
 J. W. DRAPER, on the "Forces producing the Organization of Plants," on capillary attraction, electricity, and chemical action of light, 1844.
 A. EATON's "Manual of Botany for North America," on the system of Linnaeus, 1st ed. in 1818, 8th in 1840 (in the last edition Wright cooperated), and some elementary books, marked an epoch in the progress of the science in this country.
 A. ELLIOTT issued in numbers (1816-'34), a valuable "Sketch of the Botany of South Carolina and Georgia."
 G. B. EMERSON, on "Trees and Shrubs of Massachusetts," 1846.
 G. ENGELMANN wrote on *Cytisaceae* in 1843, and with A. Gray on Lindheimer's Texan plants, 1845.
 A *Flora Columbiensis* appeared at Washington in 1812, anonymously.
 J. R. FOSTER'S *Flora America Septentrionalis*, 1771 (also in Bosc's travels, vol. 8).
 J. FRASER, an indefatigable collector, on *Agrostis Cornucopia*, London, 1789, and on *Thalia dealbata*, 1790, with a table drawn and colored by J. Sowerby, an eminent artist.
 J. C. FREMONT'S "Plants of the Rocky Mountains" (1845), published by Torrey.

- Dr. ALEX. GARDNER, of Charleston, corresponded with Linnaeus, Collinson and Ellis.
- A. GRAY, an eminent botanist of the United States: elementary books, monographs of American *Rhynchospora*; a revision of *Melanthaceae*, remarks on *Ceratophyllaceae*; has catalogued American *Gramina* and *Cyperaceae*; reviewed J. Dumas, J. B. Boussingault, Johnston, and Draper, on the Chemistry of Vegetation; notes on the mountains of North Carolina; notices on Rafinesque, and on European *Aerbaria*; *Chloris Boreali-Americana*, illustrating rare plants; also a complete "Manual of the Botany of the Northern United States," 2d ed. 1858; "Introduction to Structural and Systematic Botany and Vegetable Physiology," 1858; began in 1849 his great work, *Genera Flora Americana Borealis illustrata*, which is to be in 10 vols. Many of his short works have been published in American literary periodicals. He was associated with G. Engelmann in a work on Lindheimer's plants of Texas; with W. S. Sullivant, who wrote on the mosses and liverworts of the U. S. east of the Mississippi; with J. Torrey, in the "Flora of North America," an abridged description of indigenous and naturalized plants, north of Mexico, 3 vols. 1883-'48.
- Jo. F. GRONOVIVS published *Flora Virginica*, Lugd. Bat. 1789-'48; 2d edition, 1793, by his son, augmented with the observations of Clayton, Colden, Mitchell, Kalm, &c.
- W. JACKSON HOOKER, one of the best European botanists, published lists of plants on the eastern coast of Greenland, 1832; an account of a collection of Arctic plants by Edw. Sabine, 1834; with Walker-Arnott, the botany of Capt. Beechey's voyage to the Pacific and Behring's Strait, 1841; a *Flora Boreali-Americana*, 1838-'40, 3 vols. 4to, 288 plates (including Texas). His agents were Douglas, Drummond, Richardson, and others.
- J. JACKSON, a neighbor of H. Marshall, collected and cultivated many rare plants at his estate of Londongrove, near Philadelphia, about 1777.
- J. JOSELYN's "New England's Rarities," London, 1673, and an account of two voyages to New England (1683-'74), contain many marvellous botanical observations.
- PETER KALM, sent out by Linnaeus, 1748, travelled in Pennsylvania and Canada for 8 years, and published his observations at Stockholm, 1751, and again in 1758-'61.
- AD. KUNZ, of Pennsylvania, another of the pupils of Linnaeus, was the first American professor of botany (1768) in Philadelphia, but he did little for the science.
- LAMARCK, in the *Journal d'histoire naturelle*, vol. 1, gave notices of rare plants observed by Michaux.
- The collections of plants made by LEWIS and CLARK on their western expedition were mostly lost.
- JAMES LOGAN, secretary to Wm. Penn, experimented with Indian corn, concerning the sexuality of plants. His *Experimenta et Meditata de Plantarum Generatione* (also on the refraction of light, Lugd. Batav. 1739), were translated into English by Fothergill (1747), who states that S. Morland said (about 1696) that the pollen entered the ovary through the style.
- HUMPHRY MARSHALL, a native American, published an alphabetic *Arbustum Americarum*, Philadelphia, 1735, and established the 2d botanic garden on this continent, on the site of the present village of Marshallton, in Chester co., Pennsylvania.
- MAYER, *De Plantis Labradoricis*, Urbt 8, was published, Lips. 1680.
- ANDRÉ MOREAUX, *Histoire des chênes de l'Amérique*, published by his son Frans André, Paris, 1801, with 90 plates by the renowned P. J. Redouté. The son published, moreover, *Voyage à l'ouest des monts Alleghany et retour à Charleston par les hautes Carolines*, &c., Paris, 1804; *Mémoires sur la naturalisation des arbres forestiers de l'Am. Sept.*, &c., 1805; *Notices sur les arbres Bermudes*, 1806; *Histoire des arbres forestiers de l'Am. Sept.* (discussing their uses in arts, commerce, &c.), 1810-'12, 8 vols. 4to, with 145 plates; and in connection with C. L. Richard, a *Flora Boreali-Americana*, containing the discoveries of his father, 1808, with 51 plates, republished with a mere change of title in 1830. An English epitome of the "Oaks," 1810-'12, containing 26 black plates; and the imitation under the name of the "North American Sylva, or Forest Trees of the United States, Canada, and Nova Scotia," 150 colored engravings, Paris, 1817-'18, 4 vols. 2d edition, at New Harmony, Ind., 1840, 8 vols. An edition was printed at Paris for Philadelphia. (See Nuttall for the supplement.)
- J. MITCHELL of England, settled in Virginia, sent collections of plants to Linnaeus, Collinson, &c.
- H. MÜLLERBERG of Lancaster, Pa., catalogued the plants of that region, described *Gramina* and *plantas calamitatas* of North America, 1817; his works were partly republished by his son.
- MAXIMILIAN, prince of Wied, travels in Brazil, 1815-'17, and in North America, 1839-'34, were published at Coblenz, 1839, and their botanical contents were described by Chr. G. Nees von Esenbeck, 3 vols.
- THOMAS NUTTALL published genera of North American plants, and a catalogue of species (1817-'19), 3 vols.; a description of new species and genera of composite, collected on a voyage across this continent, in Oregon, Upper California, and on the Sandwich Isles, in 1834-'5 ("Transact. Amer. Philos. Soc." 1841); and a supplement to F. A. Michaux's North American Sylva, with additions of the trees observed in the Rocky mountains, Oregon, on the shores of the Pacific, &c., Phil., 1842, with 122 colored plates; beside the works noticed elsewhere.
- AMER. M. F. J. PALISOT DE BEAUVOIS, author of the magnificent *Flora d'Oware et de Benin en Afrique* (Latin and French, 1804-'7), wrote also on American plants (in the above-named "Transactions.")
- The brothers JOSEPH and SAMUEL PEIROZ cultivated (about 1800 and later) perhaps the finest trees in this country, at East Marlborough, Pa.
- SAM. PETIVER's *Herbarium Virginianum* (in the "Memoirs for the Curious," 1707), *Hortus Socus Plantarum Americanarum*, with plates, are at London.
- FR. TRAUGOTT PURSCH (anglicized Puresh), *Flora America Septent.*, 3 vols., London, 1814-'16, is a good work. He also wrote *Hortus Oricentensis* (on an island near St. Petersburg), 1815; and a list of plants, *Im Plautischen Grunde*, near Dresden, 1799, fol.
- DE LA PYLAIÉ: *Flora de l'île de Terre-neuve*, Paris, 1829.
- C. S. RAFINESQUE-SCHMALZE published many works on natural history, in Italian and French, at Palermo (1810-'15), before his arrival in the United States, where there were brought to light many more, and some of them voluminous (1816-'38); among which we notice the "Annals of Nature;" the *Neogenion* (describing 66 new genera of North American plants); a "Medical Flora of the United States," with more than 100 figures; the "Herbarium;" and the "New Flora and Botany of North America" (supplemental to all American botanical works, as well as to those of the great European botanists, &c.) All these were written eccentrically. He resided mostly at Lexington, Ky.
- RICHARDSON, "Botanical Appendix to Sir J. Franklin's Narrative of a Journey on the Shores of Hudson's Bay and the Polar Sea."
- J. L. RIDDELL, "Synopsis of the Flora of the Western States," 1835.
- JEAN ROBIN, *Histoire des plantes nouvelles trouvées à l'île de Virginie, et autres lieux*, Paris, 1630; published with Lincolier's *Histoire des plantes*.
- J. D. SCHOMER, *Materia Medica Americana*, &c., Erlange, 1787.
- L. D. VON SCHWEINITZ, of Bethlehem, Pa., wrote, beside what is noticed elsewhere, a monograph of the American viola, and of the species of carices, and a synopsis of native fungi; a "Narrative of the Expedition to the Source of St. Peter's river, to Lake Winnipeg," &c., London, 1822; *Specimen Flora Amer. Sept. Cryptogam.*, Raleigh, 1831.
- J. L. E. W. SHREVE, *Flora Carolinensis*, &c., collected or compiled, Charleston, 1804, 2 vols.
- C. W. SHORT, *Florula Lexingtonensis*, Ky., 1830; a supplemental catalogue of the phanerogamous plants and forms of Kentucky. He sent many plants and seeds to the Atlantic states and to Europe.
- W. S. SULLIVANT and L. LESQUEUX, on the mosses of North America.
- JOHN TORREY published, beside other works, a "Flora of the Northern and Middle Sections of the United States" (not beyond the *iceandria* of Linnaeus), 1824, 3 vols.; a catalogue of the North American genera, according to Lindley's "Introduction," 1831; a monograph of the North American *cyperaceae*; a flora of the state of New York, with a full description of all indigenous and naturalized plants, remarks on economy and medicine, Alb. 1848-'4 (in the 8d part of the Natural History of New York, 1839; being a Report on the Bot. Department of the Geolog. Survey of the State, 1836), with 161 colored plates; *Icones ineditae ad Floram Philadelphiae illustrandam*, 180 colored plates. Some of Torrey's writings are found in the American scientific periodicals.
- EDWARD TUCKERMAN arranged the carices, 1843, and gave a synopsis of the lichens of the Northern States and British America, 1848.
- T. WALTER: *Flora Caroliniana*, &c., cum emendationibus, London, 1788.
- FR. AD. JUL. VON WANGENHEIM published in German descriptions of some North American trees and shrubs, with a view to their naturalization in Germany, Götting, 1777-'80; and another work in 1787, fol. (See above under C. Colden.)
- CASPAR WISTAR, professor of anatomy in Philadelphia, was honored by Nuttall's naming a genus of the papilionaceae, Endl., *Wisteria*, which is the *Thyrsanthus*, Elliott, or *Kruwattia*, Rafinesque. Many of the American botanists have thus been immortalized.

We now give a list, in chronological order, of catalogues of the plants of the various regions of America:

- JOHN BANISTER, in Virginia, 1690 (in *Rajst Hist. Plantar., II. pars*, London, 1693).
 DAV. HORSACK, *Hort. Elginensis*, 1801-'11.
 C. W. EDDY, *Planta Plandomenses* (around J. L. Mitchell's country seat), 1807.
 J. LE COMTE, on the island of New York, 1811.
 H. MUELENBERG, *Catal. Plantar. Amer. Sept.*, 1818-'18.
 J. TORREY, of plants within 30 miles of New York city, 1819.
 C. S. RAPINUSQUE, of the botanical garden of the university of Transylvania, 1824.
 L. D. VON SCHWEINITZ, of plants collected in the north-west territory (in the narrative of the expedition), Lond., 1825.
 J. TORREY's account of a collection of plants from the Rocky mountains, &c., 1837.
 K. HITCHCOCK, of the vicinity of Amherst college, 1839, and of Massachusetts, 1835.
 H. H. KATON, a few specimens from near Troy, 1839.
 H. B. CROOK and LOOMIS, of the neighborhood of Newbern, N. C., 1839.
 J. BAERMAN, about Charleston, S. C., 1834.
 T. NUTTALL, collection toward a flora of Arkansas, 1834.
 M. A. CURTIS, about Wilmington, N. C., 1834.
 L. R. GIBBS, phanerogamous plants about Columbia, S. C., 1835.
 DR. ALEX. about Baltimore, 1834.
 J. L. RIDDELL, supplementary catalogue of plants of Ohio, 1834.
 J. A. LAFRAN, near Millwaukie, 1838.
 W. B. SULLIVANT, about Columbus, O., 1840.
 DEWEY's report on plants of Massachusetts, 1840.
 S. T. OLNEY, Rhode Island plants, 1844.
 Botanical Society of Wilmington, Del., plants of Newcastle co., 1844.
 S. F. BAIRD, contributions toward a catalogue of trees and shrubs of Cumberland co., Pa., 1845.
 A. W. CHAPMAN, a list of plants about Quincy, Fla., 1845.
 F. B. HUGH, plants in Lewis co., O., 1845.
 H. P. BARTWELL, of Western N. Y., 1845.

The following writers, in addition to those already named, may be consulted by the student:

ENGLISH.

- J. C. LONDON, author of 14 valuable works, from 1804 to 1841; and Mrs. J. W. LONDON, author of some 7 popular ones, especially for ladies, 1840-'57.
 SIR J. PAXTON's "Magazine of Botany," 1834-'43, 8 vols., with 500 tables, and (assisted by J. Lindley) a pocket botanical dictionary, 1838.
 JOHN LINDLEY (beside the greater works mentioned above), "Outline of the First Principles of Botany," 1830; "Key to Structural, Physiological, and Systematic Botany," 1835; "Ladies' Botany," 1837; "Introduction to Botany," 3d edition, 1839; "Elements of Botany," 1841.

FRENCH.

- BRISSEAU-MIRBEL, *Analyses des plantes*.
 DE CANDOLLE, *Théorie élémentaire de la botanique*, édit. 2., par Alphonse de Candolle, 1844.
 ADE. DE JUSSEU, *Éléments de botanique*, 1845; translated into English by J. H. Wilson, 1849.
 LEBOUIDRE-DELAUNDE, *Traité élémentaire de physiologie végétale*, 1845.
 MUTEL, *Éléments de botanique*, 1847.
 RICHARD, *Nouveaux éléments de botanique*, 7e édit., 1846.

GERMAN.

- ENDLICHER and UNGER, *Grundzüge der Botanik*, 1848.
 N. J. DE JACQUIN, *Einkleidung*, 1785-1800; revised by his son, 1840.
 K. S. KUNZE, *Lehrbuch*, 1847.
 C. G. NEES von ESENBECK, *Handbuch*, 1850.
 G. A. PRITZEL's *Iconum bot. indic. locupletissimus*, containing a list of all botanic works of the 18th and 19th centuries, 1855.
 M. SCHLEIDEN, *Grundzüge*, 1845-'6; *Grundriss*, 1846; *Phænomena*, 1847.
 K. SPRENGEL, *Geschichte der Botanik*, 1817-'18.
 STEUDER, *Nomenclator botanicus*.
 FR. UNGER, *Grundzüge der Anatomie und Physiologie der Pflanzen*, 1843.
 K. L. WILLDENOW, *Grundriss der Kräuterkunde*, 7th édit., 1831.

OTHER NATIONS.

- Histor. natur. Armeniaca Mechtaristarum*, vol. II., *Botanica*, Vienna, 1844; Bohemian, by Presl, 1846; Dan-

ish, by Orstedt, 1839; Modern Greek, by Fraas, 1837, another work of 1845; Dutch, by Hall, 1836; Italian, by Partore, 1834-'36; Polish, by Jundzill, 1804-'18; Russian, by Amboldt, 1794, and by Dwigubsky, 1837, both in Latin; Spanish, by Blanco, 1804-'35; Swedish, by Arrhenius, 1845.

For other nations there have been written: "Outline of the System of Linnæus for the Use of the Singalese," by Moon, 1834; "Elements of Natural Philosophy," Sanscrit, by Yates, 1835; and *Lectures sur l'hist. naturelle d'Haïti*, by Jäger, 1830.

BOTANY BAY, a bay on the eastern coast of New Holland. On account of the advantages which appeared in the place from a very cursory examination by Capt. Cook, it was decided to form a convict settlement there. In 1788 a squadron with a number of convicts was sent out. Botany Bay was, however, found unsuitable, and the settlement was made on the site of the present city of Sydney. For years the term Botany Bay was better known to the world, and a host of unpleasant and unfounded associations were conveyed by words in themselves euphonic.

BOTETOURT, a central county of Virginia. It is intersected by James river, and contains the sources of Craig's and Catawba creeks. Beside the Blue Ridge, which forms its S. E. boundary, there are other high ridges within its limits. The famous Peaks of Otter are near the dividing line between this and Bedford county. The James river canal has been opened from Richmond to Buchanan, and the Virginia and Tennessee railroad also passes through the latter town. Its real estate was valued in 1850 at \$2,419,186; in 1856 at \$3,066,322, showing an increase of 26 per cent. The productions in 1850 were 868,141 bushels of Indian corn, 121,694 of wheat, 154,068 of oats, 5,531 tons of hay, 140,885 pounds of butter, 156,188 of tobacco. There were 6 flour and grist mills, 6 saw-mills, 2 iron foundries, 8 furnaces, 1 forge, 1 woollen factory, 2 newspaper offices, 21 churches, and 828 pupils attending public schools. Pop. in 1850, whites 10,746, free colored 426, slaves 8,786; total 14,908. Capital, Fincastle. The county was organized in 1769, and named in honor of Governor Botetourt.

BOTETOURT, NORBORNE BRERKELEY, lord, a conspicuous actor in American colonial history, died in 1770, was the descendant of John Berkeley, the cavalier, who was ennobled by Charles II. in 1660. He was sent to Virginia as royal governor in 1768, just 8 years before the declaration of independence. His birth cannot be ascertained, but contemporary records speak of him as being about 84 when he came to Virginia. He had full instructions from the crown and directions to assume more dignity than had been the wont of colonial governors, and accordingly he paraded the streets of Williamsburg with guards, a coach, and other requisites of vice-regal pomp. Conflicting duties to the king and the people made his situation most unpleasant. In 1769 the assembly took into consideration the incipient troubles with England, and on May 16 passed firm but respectful resolutions remonstrating against parliamentary taxation and the right claimed to

send them to England for trial. So firm were they that Lord Botetourt summoned the speaker and burgesses before him and dissolved them. The result was that a convention met in a private house and took the incipient steps for the revolution. The convention did not attempt to legislate, but simply remonstrated with parliament, sending its resolutions to the other colonies and to England. Under the influence of these resolutions Lord Hillsborough wrote a letter to Lord Botetourt, assuring him that it was not the intention of government to tax the colonies, and that the obnoxious imposts would be withdrawn, which letter Lord Botetourt communicated to the assembly. All these anticipations, however, were destroyed by the policy of Lord North, who succeeded Charles Townsend, and the promise was not fulfilled in full, the duty on tea being retained. Botetourt was deeply mortified, and soon died of disease aggravated by mental suffering. He was deplored by men of all classes in the colony, and the legislature erected a marble statue to his memory, which is still standing in the college of William and Mary.

BOTH, JAN and ANDREAS, eminent Dutch painters, brothers, and natives of Utrecht; the elder was born 1610, died in 1650, and Andreas was accidentally drowned at Venice in 1645. After studying awhile with Abraham Bloemart, they went to Italy, where they continued to reside until the tragical event which separated them. Jan Both, whose taste inclined to landscape painting, studied much the works of Claude Lorraine. His landscapes are warm, tender, and harmonious, and the atmospheric effects are rendered with such fidelity to Italian scenery, that he was called by his contemporaries the Both of Italy. Andreas, on the other hand, painted figures, which he introduced into nearly all his brother's landscapes, and with such admirable skill, that the whole picture seems to be the work of a single hand.

BOTHNIA, a large gulf, constituting the northern arm of the Baltic sea, from lat. 60° to 65° 40' N., nearly 400 miles in length, with an average breadth of 100 miles. It extends from the island of Aland, about 65 miles north of the latitude of Stockholm, at which point it is entered by 2 channels, 24 and 14 miles in width, from the Baltic to the gulf or bay of Tornea. It is gathered into a channel much narrower than its main body, about midway of its extent, called the straits of Quarken. The channel is also further intercepted at this place by several small islands, the principal of which is Holmon. The portion lying south of Quarken is called the sea of Bothnia, and that to the north the gulf of Bothnia. The entire coast line of the gulf is very irregular. There is a strong current, or gulf stream, setting constantly from the head of the gulf southward, through Quarken, to Aland, where it divides into 2, one passing E. and the other W., to reunite again, and also with a 8d current from the gulf of Finland, near the island Kokar, whence it sets

southward through the Baltic. The gulf is usually completely frozen in the winter, so that armies have marched across it. The strong current above mentioned, and the abundant supply of fresh water from a shed of an average breadth of 150 miles throughout its entire extent of coast line, give the waters of this gulf great freshness. The gulf of Bothnia is interesting in a geological point of view, as presenting an undoubted instance of slow upheaval and subsidence of its eastern and western coasts, now taking place without volcanic action, at the probable rate of about 2 or 3 feet in a century. The coast south of Quarken is generally precipitous, while those north of the straits are generally low and sandy. A kind of herring, called *stromming*, is taken in abundance, and constitutes a prominent article of food, especially among the lower classes. The region about this gulf was formerly a Swedish province, under the name of Bothnia. The portion E. of Tornea is now a part of the grand duchy of Finland, and that W. of that river forms the Swedish governments of Umea and Pitea.

BOTHWELL, a Scottish parish, co. of Lanark, on the Clyde, with extensive iron works and collieries, sufficient to yield an annual income of nearly \$800,000, a new church, and a tower 120 feet high, the remains of Bothwell castle, and famous in history by the sanguinary battle fought on Bothwell bridge in the reign of Charles II., June 22, 1679, between the covenanting whigs of Scotland and the royal troops, in which the former were defeated with great loss.

BOTHWELL, JAMES HERBURN, earl of, afterward earl of Orkney, a Scottish nobleman of the 16th century, notorious in history for the part which he took in the murder of Darnley, and for his infamous conduct toward the unhappy Mary of Scotland. After Darnley's death he forced the queen to marry him, but forfeiting her affection by his brutality, he soon had to withdraw before the wrath of the Scottish nobles, who liberated the queen from his power. He escaped first to the Orkneys, thence to Denmark, where he was imprisoned on a charge of piracy, and died in his dungeon, in 1577, tormented, it is said, by all the agonies of an evil conscience, and leaving—as it has been asserted, but not proved—a confession, in which, while owning his own crimes, he fully exonerated Mary and exposed the regent and confederated lords.

BOTRYOIDAL (Gr. *Borpus*, a bunch of grapes, and *idos*, form), a term much used in mineralogy for describing the form of minerals which are made up of agglomerated bunches, like grapes. Malachite, the carbonate of copper, often occurs in this shape.

BOTS, the larvæ of a species of gadfly, *æstrus equi*. The following is the account of the natural history of this insect as given in Youatt's work on the horse; on all the details of which, all the medical authorities on the horse are entirely agreed. "A species of gadfly, the *æstrus equi*, is in the latter part of the summer exceedingly busy about the horse. It

is observed to be darting with great rapidity toward the knees and sides of the animal. The females are depositing their eggs on the hair, which adhere to it by means of a glutinous fluid with which they are surrounded. In a few days the eggs are ready to be hatched, and the slightest application of heat and moisture will liberate the little animals they contain. The horse, in licking himself, touches the egg; it bursts, and a small worm escapes, which adheres to the tongue, and is conveyed with the food into the stomach. There it clings to the cuticular portion of the stomach by means of a hook on either side of its mouth; and its hold is so firm and so obstinate, that it must be broken before it can be detached. It remains there feeding on the mucus of the stomach during the whole of the winter, and until the end of the ensuing spring; when, having attained a considerable size, and being destined to undergo a certain transformation, it disengages itself from the cuticular coat, is carried into the villous portion of the stomach with the food, passes out of it with the chyme, and is evacuated with the dung. The larva, or maggot, seeks shelter in the ground, and buries itself there; it contracts in size, and becomes a chrysalis, or grub, in which state it lies inactive a few weeks, and then, bursting from its confinement, assumes the form of a fly. The female, becoming impregnated, quickly deposits her eggs on those parts of the horse which he is most accustomed to lick, and thus the species is perpetuated. There are several plain conclusions to be drawn from this history. The bots cannot, while they inhabit the stomach of the horse, give the animal any pain, for they have fastened on the cuticular or insensible coat. They cannot be injurious to the horse, for he enjoys the most perfect health while the cuticular part of his stomach is filled with them, and their presence is not suspected until they appear at the anus. They cannot be removed by medicine, because they are not in that part of the stomach to which medicine is usually conveyed; and if they were, their mouths are too deeply buried in the mucus for any medicine, that can safely be administered, to affect them; and, last of all, in due course of time they detach themselves and come away. Therefore, the wise man leaves them to themselves, or contents himself with picking them off when they collect under the tail and annoy the animal." In a word, all the stories about horses being destroyed by bots eating through the coats of the stomach, are utterly impossible and absurd. When, after death, the coats of the stomach are found to be corroded and perforated, and when bots are found either in the perforations, or already passed through them, other causes have destroyed the stomach; and the bots, which have no longer any sustenance when the horse is dead, are on the move for other quarters. The treatment, therefore, for horses diseased, as ignorant practitioners will constantly affirm that they are, with bots, is

in itself founded in error, useless, absurd, and often fatal to the animal under treatment. For, in the first place, the true ailment, whatever it be, is progressing unimpeded, while the horse doctor is fighting with a shadow; and in the second place, the remedies, which certainly will not kill the bots, are exceedingly likely to kill the horse. This will easily be understood, when it is stated that bots have lived for many days together in olive oil, and even in oil of turpentine, and that tobacco and nitrous and sulphuric acids do not immediately kill them.—The above is the result of all the best knowledge of the best-informed men on the subject, who all agree that bots are never dangerous to the horse, but that the treatment to remove them is so almost invariably.

BOTTA, ANNE CHARLOTTE (LYNCH), a living American poetess, born at Bennington, Vt. Her father belonged to the association of united Irishmen, participated at the age of 16 years in the rebellion of '98, was, by reason of his youth, offered pardon if he would swear allegiance to the British government, refused, was imprisoned for 4 years, and then, being banished for life, came to America. Miss Lynch was educated in Albany, New York, began early to contribute to literary journals, and in 1841 published, in Providence, the "Rhode Island Book," a tasteful selection of prose and verse from the writers of that state. She soon after removed to the city of New York, where her house was opened weekly for assemblies of persons connected with literature and the arts. A collection of her poems, which are all short and gracefully written, and indicate depth of feeling, has been published in an elegant volume, furnished with illustrations by Durand, Darley, Huntington, Brown, and other artists. Her prose writings in periodicals, consisting of essays, tales, and criticisms, are numerous.—She was married in 1855 to VINCENZO BOTTA, a native of Piedmont, formerly doctor of philosophy and divinity in the university of Turin, and professor of philosophy in the royal and national colleges of that city. He was a member of the Sardinian parliament in 1849, and, after having visited Germany, published, in connection with another member of the parliament, and under the patronage of the government, a work on public education.

BOTTA, CARLO GIUSEPPE GUGLIELMO, an Italian historian, born at San Giorgio Canavese, in Piedmont, Nov. 6, 1766, died in Paris, Aug. 10, 1837. He was educated as a physician at the university of Turin, and employed the leisure incident to a young practitioner in the study of literature, botany, and music. In 1792, during the political excitement consequent on the beginning of the French revolution, he was accused by one of his own companions, thrown into prison, put to the torture in order to make him confess his imputed crime, and, though nothing could be proved against him, and his friends did all that they could for him, subjected to a rigorous confinement, alleviated only by the kindness of a turnkey, who treated him with all possible ten-

derness, and once, at the risk of severe punishment, brought his dearest friend to see him. His only resource during his imprisonment was his flute and reading. He had a treatise on geometry, of which he was very fond, a copy of *Tristram Shandy*, and Guicciardini's history of Italy. At last his innocence was established, and, after 17 months in a dungeon, he was set at liberty. He immediately went to France, and was soon after employed as surgeon, first in the army of the Alps, and afterward in that of Italy. He thus became an eye-witness of many of the events which he has recorded in his history of Italy, and, although he was never present at any of the battles of those wonderful campaigns, was constantly with the army, and in such intercourse with men of all ranks and parties, as enabled him to collect and compare statements and opinions. It was at this period that he wrote his first work—a plan of government for Lombardy. Toward the close of 1796 he was sent with a division of the French army to the Venetian islands of the Adriatic, where, recalling his early studies, he wrote his "Historical and Medical Description of the Island of Oorfu." Meanwhile the conquest of Italy was completed, its kingdoms and duchies overthrown, and new republics founded. Botta, whose hopes had been excited by the prospect of reform, had watched the course of events with a keen and anxious eye. He saw with indignation the perfidious destruction and barter of the republic of Venice, the confiscation of private property, and the plunder of galleries, museums, and libraries; and finally lost faith in the political regeneration of Europe. In 1798 he was appointed a member of the provisional government of Piedmont, which was soon overthrown by the Austro-Russian invasion. He went to France and took up his residence at Chambéry, where he formed the acquaintance of the lady who afterward became his wife; and had for his daily companion the poet Monti. Bernadotte, then minister of war, soon restored him to his rank in the medical staff of the army of Italy. After the battle of Marengo he was made a member of the council which, with 6 commissioners, was to reorganize and administer the government of Piedmont. A few months later a new government was instituted under the name of the executive commission, and confided to 8 Italians, of whom Botta was one. Two acts connect his name favorably with this commission. The informer, by whose accusation he had been subjected to imprisonment and torture, was himself in prison; Botta immediately procured his release, signing the decree with his own hand, as president of the commission. The other, in which, however, the honor must be equally divided with his colleagues, was the establishment of a permanent fund with an income of 500,000 francs for public instruction. In 1802, Piedmont was reannexed to France, and he became a member of the council of general administration for the 27th military division; and

when, in the following year, a deputation was sent to Paris to thank Bonaparte for the definitive annexation of Piedmont to France, he was chosen to represent his department. It was then that he published his *Précis historique de la maison de Savoie et du Piémont*. On Aug. 10, 1804, he was chosen to represent the department of the Dora in the legislative body, and from that time became a resident of Paris. The American war of independence having been suggested in the house of Madame Manzoni, as the best subject for an epic, Botta's attention was called to the grandeur of that event, and he resolved on becoming its historian. Lafayette, Marbois, and other prominent actors in the scene, who were living at Paris, cheerfully lent him books and maps and private documents, and answered his questions; and the public libraries contained large collections of pamphlets and official reports. Thus surrounded with a rich array of materials, nothing remained but to give them a shape which would make them useful to the cause of Italy. He had always been an enthusiastic student of his native literature, and he now conceived the bold design of appealing to the patriotic instincts of his countrymen by writing in the classic Italian of the 14th and 16th centuries. His success was complete. The first edition, which appeared in Paris in 1809, was immediately reprinted in Italy, where it ran through several editions in various forms, giving rise to discussions and researches; and thus the history of the war of American independence became a contribution to the independence of Italy. It was translated into English by Mr. G. W. Otis of Boston, and at once made the author's name familiar in this country. Meanwhile, in 1808 he was chosen vice-president of the legislative assembly, and reelected to the same office the following year. In Dec. 1809, he was proposed as candidate for the questorship, but set aside by Napoleon, who was dissatisfied with some criticisms which the historian of Washington (for this was the light in which Botta always regarded his history) had made upon the imperial government. On Jan. 8, 1810, he was a member of the deputation from the academy of sciences of Turin, which presented to the emperor the last 2 volumes of their acts. On the fall of Napoleon Piedmont was again separated from France, and Botta returned to private life. During the Hundred Days he was made rector of the academy of Nancy, but lost his place again upon the return of the Bourbons. Piedmont was now not a safe residence for a man of his opinions, and he remained at Paris. His wife fell into a decline, and when her physicians prescribed a change of air, he was obliged to sell to an apothecary, at the price of waste paper, the last 500 copies of his history, in order to raise the means of paying the expenses of her journey. She went to Chambéry and died. In 1815 he published an epic poem in 12 cantos, entitled *Il Camillo, o Vejo conquistata*, which

met with considerable success. In 1817 he was made rector of the academy of Rouen, where he remained till 1822, when he was removed. At Rouen he had written his second history, the "History of Italy from 1789 to 1814;" but it was not till 1824 that he was able to publish it, and even then he was indebted to the generosity of a personal friend, Poggi, of Parma, for the means of defraying the expenses of the publication. This, too, like the history of the American war, was immediately republished in Italy. The 8th and last volume of a German translation appeared in 1831. But the want of a law of copyright deprived the author of all the pecuniary profits of his work, and the only compensation that he ever received was a certain number of copies from Rosini of Pisa, who had produced a beautiful edition in 8vo, and a set of Latin and Italian classics from Molini of Florence, who had added it to his edition of the most distinguished Italian authors. In 1825 he was applied to by a French publisher to write a general history of Italy for a collection of popular histories. It was a contract for money, accepted and executed under the pressure of want. But it led to his history of the people of Italy, a work not free from errors nor uniform in execution, but written with life and warmth, 8 volumes in 8 months, the manuscript passing sheet by sheet, as fast as it was written, from the author's desk to the hands of the printer. Another interval of trial and struggle ensued, during which some of his friends were endeavoring to form an association for the purpose of enabling him to resume his pen and connect his history of Italy with the great work of Guicciardini. As soon as the arrangements were completed he set himself to the welcome task, and in 5 years was ready for the press with the 10 volumes of his history of Italy from 1532 to 1789. This was the last of his works. The remainder of his life was passed in Paris, with the exception of a short visit to Piedmont. In the latter part of his life he derived from Charles Albert a pension of \$600, which was afterward raised to \$800. A monument was erected to him in Paris by 6 of his admirers, 2 of whom were French, 2 Italians, and 2 Americans.—PAUL EMILE, son of the preceding, a French archæologist, born near the beginning of the present century. He made in his youth a voyage round the world, and formed on the western coast of America a collection of natural curiosities. In 1830 he accompanied the expedition of Mehemet Ali to Sennar, and completed a rich zoological collection. He was then appointed French consul at Alexandria, and in 1837 made a journey through Yemen, of which a very interesting account was published in 1844. In 1843, being consular agent at Mosul, he began the excavation of Assyrian antiquities from the sand hills on the banks of the Tigris. The French government commissioned several eminent scholars and academicians to assist him in the preparation of a magnificent work entitled *Monuments de Ninivé, découverts et décrits par P. E. Botta,*

monnés et dessinés par E. Flandin, which was issued at Paris, in 5 volumes, in 1849-'50. Many of the discovered monuments were transported to Paris, and placed in the Louvre. The labors of Botta laid the foundation for the still more important results which have been obtained by Layard.

BOTTARI, GIOVANNI GAETANO, a learned Italian prelate, born at Florence, Jan. 15, 1689, died in Rome, June 8, 1775. He was director of the grand-ducal press of Tuscany, and subsequently keeper of the Vatican library, filling, at the same time, important ecclesiastical functions. He was principal editor of the new edition of the *Vocabulario della Crusca*, and crowned the labors of his life by his splendid edition of the Vatican Virgil, published in 1741.

BOTTESINI, LUIGI, an Italian composer and contrabassist, born in 1823, at Crema, Lombardy. He was taught the double-bass in Milan, by Luigi Rossi, according to the method of Andreoli and Dragonetti, and soon became a first rate performer; meanwhile studying musical composition under several distinguished masters. When scarcely 23, he was engaged as contrabassist for the Italian opera in Havana, where in a few seasons he rose to the post of *maestro* and musical director of the company. During the 5 years of his stay in Havana, he paid occasional visits to the United States, where he secured considerable fame by his wonderful performances in the concert-room. His masterly handling of the huge instrument took everybody by surprise, while his style, at once elegant and impressive, won the admiration of all critics and amateurs. His success on his return to Europe, in 1851, was not less complete; the concerts he gave in London and Paris established his reputation as the first living contrabassist. In 1853 he returned to the United States with M. Jullien, and afterward accompanied Madame Sontag to Mexico. Subsequently he became director of the orchestra at the Italian opera in Paris, where his opera *L'Assedio di Firenze* was successfully performed during the spring of 1855. He has since resumed his instrumental performances, and travelled in Germany, and more recently in Russia.

BÖTTGER, or BÖTTCHER, also written Böttger, JOHANN FRIEDRICH, a Saxon alchemist, born at Schleitz about 1681, died in Dresden, March 13, 1719, whose pretended discovery of the philosopher's stone resulted in the useful invention of Saxon porcelain. After various vicissitudes he handed over to King Augustus II. an account of his discovery, which is still preserved in the archives of Saxony. The king, however, not availing himself of his suggestions, they were put in application by Count Tschirnhausen, who established a manufactory at Weissen in 1706, employing Böttger, who succeeded in producing of the reddish brown clay which abounds in the vicinity of Weissen a porcelain of remarkable beauty and solidity.

BOTTICELLI, ALESSANDRO, an Italian paint-

er, born at Florence, 1487, died 1515, was a pupil of Filippo Lippi. One of his earliest frescoes, entitled "St. Augustine in Ecstasy," is still to be seen in All Saints' church, Florence, where he was buried. He decorated for Sixtus IV. a chapel in the Vatican. Beside numerous figures of the popes in the niches, he painted 3 large frescoes, "Moses slaying the Egyptian," the "Punishment of Korah, Dathan, and Abiram," and the "Temptation of Christ." He was loaded with favors by the pope, but spent all in dissipation, and returned to Florence poorer than he left it. He now abandoned painting, became one of the most zealous partisans of Savonarola, and suffered severe privations in consequence. He was acquainted with the newly discovered art of engraving, and engraved the first 19 prints for the famous edition of Dante's *Inferno*, printed at Florence by Nicolo Lorenzo della Magna in 1481.

BÖTTIGER, KARL AUGUST, a German archaeologist, born at Reichenbach, June 8, 1760, died in Dresden, Nov. 17, 1835, wrote extensively on his science, and was chief contributor to the leading literary, artistic, and scientific periodicals of his day. He was held in high regard by the great German poets, and for some time resided at Weimar and subsequently at Dresden. Three years before his death he was made a member of the French institute, an honor to which he was well entitled by the remarkable variety of his attainments, by his miscellaneous publications, and by his general influence on literature and art.

BOTTLE, now understood to mean a vessel made of glass, with a more or less narrow neck and mouth. In ancient times, however, the bottle was nothing more than a skin of some animal. When, in the Bible, we read of putting new wine into old bottles as an illustration of folly, we are to understand that they were made of skin, and thus that it would not be wise to trust a new wine, while yet active with fermentation, to the chance of bursting a leathern vessel necessarily weakened by use and age. In Spain, to this day, various skins, and especially that of the goat, are used for containing wine. The hide is stripped from the animal as entire as possible, and the various natural openings having been sewed up, with the exception of that of one of the legs, which is retained as a nozzle, the vessel is ready, after a certain preliminary curing of the skin, for the reception of the wine. The peculiar taste of Amontillado sherry is supposed to be owing to the fact of its being kept in leather. The ordinary bottle is, however, of glass, and usually of the coarsest kind of that material. In Great Britain a law prevailed, until within a very few years, prohibiting any thing but common river sand and soapboilers' waste in the manufacture of bottle glass. To make a single bottle requires ordinarily 6 men. The "gatherer," as he is called, first dips and turns around his long iron tube, some 5 feet long, into a melted mass of glass, until a ball of the material is formed at

the end, and then he takes it out to allow it to cool for a moment. This is repeated for several successive times, until a sufficiency of the material is gathered. Now the "blower" takes hold of the tube and rolls on a smooth surface of stone or metal the molten glass, until it is well pushed toward the end of his iron instrument. He then puts the glass into an open mould, which is shut by his foot, and holding his tube vertically, blows into it. This being effected, the foot is removed, the mould opens, and the glass is found to have assumed its bottle-like form. The tube is now removed, with the glass still at the end of it, and it is passed over to the "finisher," who with a cold iron snaps off the bottle smoothly at the mouth. The other workmen then complete the process by slow cooling and polishing. An ingenious piece of mechanism has been contrived, however, for the manufacture of bottles, and many are now made by its means. The bottles manufactured in this way have the advantage of allowing of exact graduation in capacity, a matter of no slight importance, since they are so frequently used in trade as a measure. The common bottle is supposed to hold a quart, but there are infinite subdivisions, from a pint downward. The various bottles used for different well-known purposes are generally distinguished by peculiar shapes and sizes, as, for example, the English wine, beer, ale, and soda bottles, the French champagne, Burgundy, and claret, and the Rhenish wine bottles. Port wine is occasionally put into very large bottles, called *magnum*, and acids in still larger, termed carboys. The largest glass bottle, perhaps, ever manufactured, was that blown at Leith, in Scotland. It was in dimensions 40 inches by 42, and was capable of holding 2 hogsheads in quantity of liquid. There is a curious act of special legislation still in the statute book of the state of New York, prohibiting the sale of soda-water bottles. The soda-water manufacturers, who were in the habit of lending their bottles to dealers until their contents were disposed of, found that their property was frequently made away with by dishonest servants, and accordingly, in order to protect themselves, succeeded in obtaining the passage of the law alluded to. At Folembay, in France, there is, probably, the largest bottle manufactory in existence, which is said to produce annually the enormous number of 8,000,000.

BOTTOMRY, in maritime law, a contract by which the owner of a ship, or the master as his agent, hypothecates or binds the ship as security for the repayment of money advanced for the use of the ship. The name is derived from bottom, that is, keel, a figure by which the vessel itself is designated (*pars pro toto*). In form it is a bond, by which, in consideration of the money lent, the borrower undertakes to repay it if the ship accomplishes its voyage, and pledges the ship for the performance of the undertaking. If the ship should be lost the debt would be lost, that is, so far as it depends upon the bottomry bond; and in consideration of this

risk, a higher rate of interest may be agreed for than is allowed in other contracts. In case of partial damage to the ship, it is usually provided that the lender shall bear his proportion of it, which will be the proportion the amount lent bears to the whole value of the vessel. The lender is not entitled to possession of the vessel, nor even to take possession of it when the debt becomes due (unless it should be so expressly stipulated in the bond), but may enforce payment of the debt by a decree of a court of admiralty for sale of the vessel. The principle peculiar to this species of contract is that it is a case of necessity, usually when the vessel is in some foreign port, and the owner has no other resources for obtaining the necessary supplies. It would impair the obligation of the bond if there were in fact other means of getting such supplies without hypothecation of the vessel, and this was known to the lender. From the nature of the case supposed, that is, the necessity of having supplies which cannot be obtained except upon the pledge of the vessel, the master is authorized to execute the bond for such a purpose. A bottomry bond is a pledge of the ship and freight; a *respondentia* bond is a pledge of the cargo; but both ship and cargo may be included in the same instrument. As respects the cargo, there is not strictly a lien for the money lent, except in case of partial loss; but if the voyage is successfully performed, the obligation is merely personal, unless an express provision be inserted in the bond for a specific lien upon the goods.

BOTTIS, JOHN MINOR, an American politician, born in Dumfries, Prince William co., Va., Sept. 16, 1802. When the whig party assumed its definite form, in 1834, he became one of its most ardent and prominent supporters. As early as 1838 he was elected from Henrico county to the legislature of Virginia, and was afterward several times reelected. In 1839 he was returned to the 27th congress, and there advocated most of the points of Mr. Clay's programme—a national bank, a protective tariff, and the distribution among the states of the proceeds of the public lands. Though long a warm and intimate friend of John Tyler, Mr. Bottis at once abandoned him on his secession from the whig party; and in the presidential election of 1844 he supported Mr. Clay. In 1843 he had been left out of congress, but in 1847 was returned to that body for the third time. After the death of Mr. Clay, and the dissolution of the whig party, he became attached to the American party. He was opposed to the repeal of the Missouri compromise, and sympathized with those southern members of congress who opposed the passing of the Le-compton bill in 1858.

BÖTZBERG (*Mons Voceticus*), a mountain of the Jura, in the Swiss canton Aargau, whose culminating point, 1,850 feet above the sea, commands a superb view of the Alps. The Helvetians were defeated here by Alienus Cæcina, A. D. 79. The Romans constructed a

highway across the Bötzbberg, and a new road was laid out in 1780.

BOTZEN, BOZEN, or BOLZANO, a town in the Austrian circle of Brixen, in Tyrol, on the junction of the river Talf with the Eisach, 32 miles N. N. E. of Trent; pop. 9,700, chiefly Italians. It is built amid mountains, at more than 1,000 feet above the sea. It contains a castle, a Gothic cathedral, several churches and convents, and various manufactories of cloths. It has 4 yearly fairs, which were of great importance in former times. The Austrian archduke Rainer spent here the latter part of his life.

BOU MAZA, a fanatic Arab warrior of Algeria, born about 1820 among the tribes who inhabit the country between Tlemcen and Mascara. From his childhood he was a devoted member of the religious sect of which the sherif Muley Taieb, a kinsman of the emperor of Morocco, is the recognized head. For several years he led the austere life of a dervish, when the battle of Isly took place, which gave the death-blow to the Arab power in Algeria, and forced Abd el Kader to seek refuge in Morocco. Bou Maza, availing himself of the excitement which then prevailed among the Arabs, came forth from his seclusion to preach a crusade against the French. The entire population of Dahr was roused by his inflammatory appeals, and the first aggressive act took place on April 20, 1845, when an attack was made by Bou Maza and his followers upon the people whom they met on the road from Tenez to Orleansville. This was followed by sharp conflicts between the insurrectionary tribes on the one hand, and the authorities of Morocco and their allies, the French, on the other. On Sept. 21, 1845, when Abd el Kader's insurrectionary movement broke out in Morocco, he was assisted by Bou Maza, who inflicted losses upon the French army on several occasions. Bou Maza was finally, April 18, 1847, compelled to surrender himself to St. Arnaud, by whom he was sent to Paris. Here a pension of \$3,000 was settled upon him by the government, and apartments in the Champs Elysées were put at his disposal. At one time, it was even contemplated to give him the command of one of the Arab regiments in Algeria. He availed himself, however, of the excitement of the revolution of 1848, to make his escape from Paris during the night of Feb. 23, but was arrested at Brest and removed to the fortress of Ham, and detained there until July 22, 1849, when he was liberated by order of Louis Napoleon, under condition, however, that he would not leave the city of Ham. He was set entirely free in 1852.

BOU SADA, a town of Algerian Sahara, among the Atlas mountains, situated in a fertile tract surrounded by a desert plain, and containing about 500 houses, with 5 mosques. It is singularly laid out, each of the 8 divisions into which it is cut up being encompassed by its own gardens in such a way as to give the town the appearance of a cluster of 8 villages.

BOUCHER, ALEXANDRE JEAN, a French violinist, born in Paris, April 11, 1770. He gained distinction before he was 20; he was called the "Alexander of the violins" in France, and the French Paganini in Germany. He was remarkable for his personal resemblance to Napoleon I.

BOUCHER, FRANÇOIS, a French painter, born in Paris, Sept. 29, 1703, died there May 30, 1770. He painted with remarkable facility, and the number of his pictures and drawings is said to have exceeded 10,000, while at the same time he practised the art of engraving. His tendency to pander in his productions to the licentious taste of his times, made him exceedingly fashionable and popular, and caused him to be called the painter of graces. Since the first revolution his works have been unsalable, until within the last 30 years, when they have again been sought for, especially by English amateurs, from the light which they shed upon the taste of the 18th century. His most remarkable portrait is that of the famous Madame de Pompadour, and his best mythological picture, "Diana's Bath," was purchased by one of the Rothschilds in 1851 for \$700, and ceded by him at the same price, as a matter of generosity, to the French museum in 1852.

BOUCHER, JONATHAN, a learned English clergyman, born in Cumberland, March 12, 1738, died at Epsom, April 27, 1804. He came to Virginia about 1754; officiated first as private teacher, and, after receiving episcopal ordination in England, as rector in Virginia and Maryland until 1775, when he returned to his native country, his anti-revolutionary sentiments having given umbrage to his American congregation. From 1784 to the time of his death he officiated as vicar of Epsom in Surrey. He is the author of a glossary of provincial and archaeological words, which was intended by him as a supplement to Dr. Johnson's dictionary. In 1799 he published 2 assize sermons, and 15 sermons which he had delivered during his ministry in America, and which treated of the American revolution. These he dedicated to Washington; they are interesting from the political anecdotes which they contain.

BOUCHES-DU-RHÔNE, a south-eastern maritime department of France, consisting of a part of ancient Provence, situated, as its name implies, at the mouth of the Rhone; area, 2,195 sq. m.; pop. in 1856, 473,365. Its surface is uneven, being intersected on the E. by the last offsets of the maritime Alps. It is drained by the Rhône (which receives the Durance and several minor branches), a violent stream, frequently overflowing its banks and causing great damage. Some 20 miles after entering the department on the north, and 25 miles from the sea, it divides into 2 branches, forming a delta called the island of Camargue, which is partly cultivated and in pasture, partly occupied by marshes and lagoons. On the north of the lagoons is La Crau, a dreary plain, mostly of

gravel, stretching to Arles; during the summer it is entirely arid and waste, though in winter it furnishes pasture to large flocks of sheep and goats. These flocks, which are said to amount to nearly 1,000,000, form the principal wealth of the department; they are sent to the mountains about the beginning of the spring, and return in the autumn. Their migrations offer a curious spectacle, as sheep are sometimes gathered to the number of 25,000, under the guidance of a small body of shepherds picturesquely accoutred. The horses and cattle are few and of poor breed. The unfavorable nature of the soil, the minute division of land, and the attachment of the proprietors to routine, have considerably hindered the progress of agriculture; the quantity of corn gathered in the department is insufficient for home consumption, while the produce of wine, estimated at 820,000 hectolitres, leaves a large surplus for exportation. Silkworms are raised in large quantities; olives cultivated on a great scale, being partly exported as fruit, and partly converted into oil. There are manufactories of soap, hosiery, and silk, sugar refineries, and oil-mills. The trade is mainly carried on through the port of Marseilles. Beside Marseilles, the principal towns of the department are Arles, Aix, Tarascon, and Aubagne.

BOUCHOTTE, JEAN BAPTISTE NOËL, a French minister of war, born at Metz, Dec. 25, 1754, died there in June, 1840. He entered the army at the age of 16, and when the revolution began was only a captain of cavalry. He soon became a colonel, and after the defection of Dumouriez he distinguished himself by preventing the Austrians from seizing Courtrai. The convention, by a unanimous vote, April 4, 1793, made him minister of war in place of Beurnonville, whom Dumouriez had surrendered to the enemy. There was a scarcity of munitions; the frontiers had been penetrated at several points; there was an insurrection in the Vendée. Bouchotte by his activity aided the committee of public safety to organize and to furnish supplies to the armies. His name is read beneath the orders promoting Massena, Kleber, Augereau, Moreau, Bernadotte, and Napoleon himself, with more than 80 other generals, afterward famous. He had taken an active part in the troubles of 1793, and during the reign of terror was accused of having cried, *Vive le roi*. At a later date, after the 9th Thermidor, he was persecuted as a terrorist.

BOUDINOT, ELIAS, an American revolutionary patriot, born in Philadelphia, May 2, 1740, died in Burlington, N. J., Oct. 24, 1821. He was descended from a family of French Huguenots who came to America after the revocation of the edict of Nantes. He received the greatest advantages of education, the colonies could afford, after which he studied law and commenced the practice in New Jersey. He was early a devoted advocate of the patriot cause, and in 1777 was appointed

by congress commissary-general of prisoners, and during the same year was elected a member of that body. In 1782 he became president of congress, and as such signed the treaty of peace. In 1789 he resumed the practice of the law, but in 1796 was appointed by Gen. Washington superintendent of the mint, an office he held until 1805, when he resigned all public employments and retired to Burlington. The rest of his life he devoted to his own affairs and to the cultivation of literature. He became a trustee of Princeton college in 1805, and endowed it with a valuable cabinet of natural history. In 1812 he became a member of the American board of commissioners for foreign missions, and in 1816 was made the first president of the American Bible society. To these and other institutions he made magnificent donations. Early in life he married the sister of Richard Stockton, who was the mother of a daughter that survived him. He was author of many works, among which was "The Star of the West, or an Effort to discover the Lost Tribes of Israel," in which he seeks to show that the American aborigines are Jews.

BOUFFÉ, a French comedian, born in Paris, Sept. 14, 1800, died in 1858. He was employed in the workshop of a gilder, when a new theatre of the *Boulevard du Temple* tempted him to try his fortune upon the stage, and he accepted an engagement to play the traitors in melodramas, at the rate of \$60 a year. This salary was soon raised to \$250, and afterward to \$1,000. His reputation in a larger sphere, however, was not made until Feb. 28, 1824, when his humorous and grotesque personifications were favorably received at the *théâtre de la Gaîté*. From that period until 1849, when declining health interfered with his acting, Bouffé delighted his audiences, especially in the *Gamin de Paris*, *La Fille de l'Avaro*, *L'oncle Baptiste*, and in *Michel Perrin*. The latter was his most popular performance.

BOUFLERS, LOUIS FRANÇOIS, marquis, and afterward duke, marshal of France, born Jan. 10, 1644, died Aug. 23, 1711. His mother was the mistress of Stanislas, king of Poland. He first served from 1662 to 1675 under Beaufort, Créqui, and Turenne, and distinguished himself during the retreat of the French army before Montecuculli. He was created marshal in 1698, and duke in 1695. In 1708 he held Lille for 8 months with unflinching courage, and preserved the city against the besiegers. At Malplaquet, he served as a volunteer under Marshal Villars, although he was his senior in rank. When the latter was wounded, Boufflers was constrained to retreat; but he succeeded in saving all the guns, and left only 80 prisoners in the hands of the enemy.

BOUFLERS, STANISLAS, marquis, first known as the abbé, then as the chevalier de Boufflers, born in 1787, at Luneville, died in Paris, Jan. 18, 1815. His wit and elegant manners, aided by a facility in versification, rendered him a favorite among the ladies at the court of Louis XV.

His little poems, suggested by the occasion, sparkling with fancy and originality, were eagerly sought for in that licentious society. With the revolution he became a man of sense; held an honorable rank among the deputies to the constituent assembly; and supported the decree by which the ownership of their discoveries is secured to inventors. He afterward went to Prussia, where he received from the king a grant of lands to establish a French colony; but the plan failed. He returned to France in 1800, and in 1804 he was admitted to the French academy. He was a fervent apologist of Napoleon and his family.

BOUGAINVILLE, LOUIS ANTOINE DE, a French soldier and navigator, son of a notary at Paris, born Nov. 11, 1729, died April 31, 1814. While still very young, he acquired a remarkable proficiency in the exact sciences, and published in 1754 a treatise on the integral calculus. Meanwhile he had entered the military service as aide-de-camp to Chevert. In 1754 he went to London as secretary of the French embassy; in 1756 he was sent to Canada, where he served with distinction under Montcalm, whose aide-de-camp he was. After the death of that general, Bougainville returned to France, and in 1761 displayed such courage in the campaign on the Rhine, that he received from the king the gift of 2 cannon, which he had taken from the enemy. Peace being concluded, he entered the navy, and in a few years he reached a high degree of eminence in that service. He undertook to establish a French colony in one of the Falkland islands, and there was some prospect of success, when Spain objected to the undertaking as an encroachment on her rights. The French government agreed to give up the colony, on payment of an indemnity to Bougainville. Consequently in Nov. 1766, he sailed from St. Malo, with a frigate, *La Boudouin*, and store ship, to the Falkland islands, where he officially surrendered his colony. After paying a short visit at Montevideo, he sailed southward, passed through the straits of Magellan and entered the South sea, which was still for the most part a *mare incognitum*. He looked first, but in vain, for Davis's land, then steered through the Paumotu archipelago, where he discovered several yet unknown islands, and arrived at Tahiti, April 6, 1768, where he remained for a few days. Pursuing his exploration, he viewed the Hamoa archipelago, to which he gave the name of Navigator's islands, and saw the northern part of that cluster, which received a few years later from Captain Cook the appellation of New Hebrides. He then reconnoitred the eastern coast of New Holland; but on account of his scanty provisions and the health of his crews, he thought it more prudent to sail northward. He doubled Louisiade islands with the greatest difficulty, and passed the large Solomon's archipelago, which had not been visited since its discovery by Mendana, and put in at Port Praslin, New Ireland, where he repaired his ships, but

was unable to find any provisions. He then took his course westward, discovering on his passage some small islands, and viewing the northern shore of New Guinea. Finally he reached Booro, one of the Moluccas, where he succeeded in procuring a fresh supply of provisions, which his men were in great need of. He then resolved to return to his native country, from which he had been absent nearly 2½ years; and on March 14, 1769, reached St. Malo. Two years later, he published his *Voyage autour du monde*, a very interesting account of his adventures, with a graphic description of the countries he visited; it was immediately translated into English, and in 1783 into German. Bougainville had scarcely completed this work, when he planned a voyage to the north pole. He wrote a memoir on the subject, proposing 2 distinct routes, but expressing a decided preference for one of them. This memoir was submitted to the royal society of London, of which he had been admitted a member; and very probably his observations were of some avail to Capt. Phipps (afterward Lord Mulgrave), who, in 1778, undertook a voyage to the Arctic sea, where he got as far as lat. 80° N. In 1778, when the French took part in the American war of independence, Bougainville was appointed to the command of a ship of the line, and distinguished himself in all the engagements between the fleets of France and England. In the memorable conflict in which the count de Grasse was defeated by Admiral Rodney, April 12, 1782, the *Auguste*, the ship commanded by Bougainville, suffered most severely, but maintained its station in the line to the last extremity; when no hope of retrieving the fortune of the day was left, by a judicious and decisive movement, he succeeded in rescuing 8 sail of his own immediate division, which he conducted safely to St. Eustace. Returned to France, he resumed his project of a voyage in the Arctic seas, but received no encouragement, and finally left the naval service in 1790, to return entirely to the scientific pursuits of his early life. In 1796 he was admitted to the French institute, and subsequently became a member of the board of longitude. On the organization of the senate, he was made a member of that body by Napoleon, who also ennobled him.

BOUGIAH, BUGIA, or BOUJAYAH (Fr. *Bougie*), a town of Algeria, district of Constantine. It is a coast town between Algiers and Bona, with an excellent roadstead. The trade of Little Kabylia and of the plain of Metjana centres in Bougiah, and the movement in oil and wax is important—wax-candles deriving their name (*bougie*) from this town. The arrivals of vessels in 1852 were 245, with 8,520 tons. Stationary population 1,800, of whom 700 are French, with about 500 other Europeans. The desert winds are very prevalent, and are laden with the seeds of disease from marshes. Bougiah was formerly a strongly fortified town; the fortifications had fallen into decay, but they have

been renewed since the French occupation, which took place Sept. 29, 1833. The political administration of the French government in Bougiah dates from 1838.

BOUGIE, a long slender wand used in surgery. It is usually made of slips of waxed linen, coiled into a cylindrical or slightly conical form, by rolling them on any hard smooth surface. It is also sometimes made of catgut, and of elastic gum and metal. The instrument, after being lubricated with sweet oil, is introduced into the urethra, and passed into the bladder, to relieve stricture and remove obstructions to the passage of the urine. It is also used for dilating the oesophagus and rectum in cases of stricture. It is said to have been first invented by Aldereto, a Portuguese surgeon; but his pupil, Amatus, first described the form of the instrument and the mode of using it, in 1554.

BOUGUER, PIERRE, a French mathematician, born at Croisic, Feb. 16, 1698, died Aug. 15, 1758. After holding professorships of hydrography at Croisic and Havre, he succeeded Manpertuis as associate geometer of the academy of sciences, and was afterward made pensioned astronomer. He was absent 10 years on the South American expedition to measure an arc of a meridian near the equator, and on his return, edited the *Journal des savants*. His works are on optics, astronomy, and navigation. His principal claim to fame is his invention of the heliometre.

BOUILLE, FRANÇOIS CLAUDE AMOUR, marquis de, a French general, born Nov. 19, 1789, in the province of Auvergne, died in London, Nov. 14, 1800. He was governor-general of the French Antilles at the beginning of the American war of independence, and not only preserved those islands against the English, but succeeded in taking several others from the enemy. He distinguished himself by his magnanimity no less than by his prowess; so that, on the conclusion of the peace, when he visited England, he received tokens of admiration from the merchants and the court. In 1789 he was in command of the eastern military division of France, and had great difficulties from the rebellious disposition of the population. Being commissioned to punish the mutinous regiments at Nancy, he attained his object by self-possession and shrewdness no less than by personal courage. When Louis XVI. projected his flight from France, he consulted Bouillé, who entered into the plan with the utmost zeal, and made all the necessary preparations; but notwithstanding all the efforts of Bouillé, the king was arrested at Varennes. Thereupon, Bouillé left France and went afterward to Russia, where the empress Catharine II. promised him an army of 80,000 men to invade France; but the promise was never fulfilled, and Bouillé repaired to England, where he wrote his excellent *Mémoires sur la révolution Française*, first printed in English, at London, in 1797, then translated into German.

They were not published in French until 1801.

BOUILLON, a large district in the Ardennes, formerly a portion of an independent principality, on the borders of Liège and Luxembourg. The capital of the principality was Sedan, a strongly fortified town on the banks of the Meuse; beside which it contained the town of Bouillon, which had a strong castle standing on a rock overhanging the river Semois, famous as having once belonged to the celebrated Godfrey de Bouillon, the crusader. The town of Bouillon contained about 2,000 inhabitants, (present pop. 2,960), and in the district were several large villages, the population of which amounted, in all, to above 20,000 souls (present pop. of the domain of Bouillon, 16,000). This district of the principality was mortgaged by Godfrey to the bishops of Liège, and had been held for many generations by the occupants of that episcopal principality, when it was claimed by the house of La Marck and La Tour d'Auvergne, but was relinquished by them in the year 1641, on consideration of the sum of 150,000 Brabant guilders, paid to them by the bishop of Liège. In the war of 1672, France conquered Bouillon, when Louis XIV. gave it to his chamberlain, the chevalier La Tour d'Auvergne, in whose family it continued until the French revolution, when, in 1792, it was taken from them, by confiscation. The last possessor, Charles Henri de la Tour d'Auvergne, died at Paris in 1812. By the peace of Paris, 1814, Bouillon was included in the dukedom of Luxembourg, which was assigned to the kingdom of the Netherlands. The title of prince of Bouillon was assumed in 1792, the same year with the confiscation and abolition of the title, by Philip d'Auvergne, a captain in the British navy, and was borne by him until his death, in 1816. The congress of Vienna, in 1815, appointed commissioners, who should decide on the respective claims of this nobleman and of Prince Charles de Rohan, and these decided in favor of the latter nobleman, the posterity of whom still bear the title. Bouillon has belonged to Belgium since 1837, forming part of the province of Luxembourg.

BOUILLON, **FRÉDÉRIC MAURICE DE LA TOUR D'AUVERGNE**, duc de, a French soldier, brother of Marshal Turenne, born at Sedan, Oct. 23, 1605, died at Pontoise, Aug. 9, 1652. He was brought up in the Calvinistic creed, and learned the profession of arms under his uncle, Maurice of Nassau. In 1635 he entered the service of France, but 6 years later, from aversion for Cardinal Richelieu, concluded an alliance with the Spaniards. At the battle of La Marfée, July 6, 1641, he displayed extraordinary ability, but the retreat of the Spaniards rendered victory useless. He then made peace with the cardinal, was appointed lieutenant-general, but the next year was arrested as an accomplice in Cinq Mars conspiracy. He would probably have been executed if his wife, who was in possession of Sedan, had not threatened to de-

liver it up to the Spaniards; he was then liberated. After the death of Louis XIII. he went to Rome, was converted to Catholicism, and promoted to the command of the pope's troops. In 1649 he returned to France, where he actively participated in the civil war against Mazarin.

BOUILLON, **GODFREY DE**, the hero of the first crusade, the son of the count of Boulogne, margrave of Antwerp, duke of Bouillon and of Lothier, and king of Jerusalem, born in 1061, died July 18, 1109. Godfrey's family was descended from Charlemagne, and had already gone through great and signal misfortunes. His father, Eustache of Boulogne, was brother-in-law to Edward the Confessor, and might have succeeded him as king of England, had he proceeded thither at his summons, to oppose William the Conqueror. His maternal grandfather, Godfrey with the beard, had, in like manner, failed to become master of Lorraine, in which he carried on a 30 years' war against the emperors of Germany, and in the course of it burned the palace of the Carlovingian kings at Aix la Chapelle. When, however, Henry IV. of Germany was persecuted by the popes, and deserted by his friends, Godfrey of the crusade, grandson of the banished antagonist of the Cæsars, was true to his suzerain. The imperial standard being confided to him, he slew Rodolf, the rival Cæsar, with the banner spear, with his own hand planted the banner on the walls of Rome, which he was the first to scale, and recovered all that was in debate for the Cæsars. The idea, however, that he had committed sacrilege by violating the city of St. Peter, sat heavy on his soul; add to this, that it had been a day-dream of his early boyhood that he would, one day, march with an army to liberate Jerusalem, and redeem the sepulchre of Christ. So soon as the crusade was proclaimed, he sold his lands to the bishop of Liège, in order to procure funds for the enterprise, and set out for the Holy Land, at the head of 70,000 foot and 10,000 horse, French, Germans, and Lorrainers. Godfrey belonged to both nations, the French and the Germans, and spoke both tongues with ease and fluency. He was not tall, his brother Baldwin was taller by a head, but his strength was prodigious. It is said that, with one blow of his sword, he unseamed a horseman from head to saddle, and with one back stroke would cut off an ox's or camel's head. When in Asia, having one day lost his way, he found one of his companions in a cavern engaged with a bear; he drew the beast's rage upon himself, and slew it, but the serious bites he received kept him long to his bed. When he reached Jerusalem, out of his enormous army he had remaining but 25,000 men; these, however, were all knights and their immediate attendants. At first, they thought to take the holy city easily, by assault; but being repulsed with loss, they were compelled to have recourse to the slow proceedings of a siege, after the forms of the olden day. Machines were erected, and movable towers built, of the few olive trees which were to be

found in that arid and rocky neighborhood, some of them supposed to have witnessed the passion of the Saviour. For 8 days the crusaders walked barefoot, clad in sackcloth and ashes, round the walls of the holy city. On the 9th, they assaulted it on all sides, with invincible bravery and zeal. The bridges were let down from the movable turrets upon the summit of the walls, and Godfrey was the first man upon the ramparts. A fearful massacre followed; for it is said that many of the crusaders, in their ignorance, forgetful of the lapse of time, believed that the Fatimites and Saracens, who defended the city, were the identical men who had crucified the Messiah, and that they were personally avenging his death on the murderers. Soon, however, the military frenzy passed away, or was changed into a religious madness. Bare-headed, on their bare knees, with streaming eyes, and bloody hands uplifted, the victors crept through the streets, whose kennels ran deep with human gore, to gain remission of their sins, before that mysterious tomb, to redeem which they had steeped their souls in carnage. After the capture, or, as it is called, the redemption of the holy city, the next thing was to determine who should have the painful honor of ruling and defending the newly acquired sovereignty. The choice fell on Godfrey, who probably estimated the honor at its true value. Yet he resigned himself to the burden. He would not, however, assume a kingly crown on the spot where the Saviour had been crowned with thorns, and, accepting only the title of baron and defender of the holy city, willingly surrendered to the patriarch the kingdom of Jerusalem, while he retained for himself only the possession, or in other words the defence, of the city. He had enough to do to defend it. In the very first year he had to fight an innumerable army of Egyptians, who had attacked the crusaders at Ascalon. It was all he could do to guard his city gates against the Arabs, who infested the whole open country, from the very day of the conquest, rendering it hardly possible to till the land. Tancred was the only leader who remained with Godfrey, and he with difficulty retained 300 knights and 2,000 foot soldiers to defend his new conquest. All the others returned, disgusted with the toils, or corrupted with the luxuries, of the Holy Land. Bohemond alone was a gainer by the war, who had taken and retained Antioch and many cities of Greece. To Godfrey his kingdom was, in a worldly sense, an irremediable misery—a protracted martyrdom, which terminated only with his life. But it was not of long duration; for having been elected king, in 1099, he died, probably of care and anxiety, and was succeeded by his brother, Baldwin I., king of Jerusalem—Robert Curthose, duke of Normandy, and eldest son of William the Conqueror, having refused the office—in the following year, 1100. Godfrey of Bouillon was a sincere, honest, and pure-minded man, and, according to his own ideas, and those

of his time, the model of a Christian prince and soldier. "Distinguished," says an old contemporary chronicler, "by his humility, clemency, sobriety, justice, and chastity, he shone rather the light of monks than the leader of soldiers." The feudal Frankish kingdom of Jerusalem, which endured yet a long while through constant difficulty and disaster, by the intercourse which it brought about between the learned, scientific, polished, and accomplished Saracens and the wild Franks and fiery Normans, did more than any other cause to soften and tame down the iron men of the West, and to civilize the whole semi-barbarous European world.

BOUILLON, HENRI DE LA TOUR D'AUVERGNE, duc de, marshal of France, born Sept. 28, 1555, died March 25, 1628. During the first part of his life he was known as viscount of Turenne. He was brought up under the superintendence of his grandfather, the old constable of Montmorency, and his education, of course, was military. When still young he was converted to Calvinism, and became an adherent of Henry of Navarre. After his accession to the throne of France, Henry conferred on him the hand and estates of Charlotte de la Marck, the heiress of the duchy of Bouillon, and thus he became a powerful prince and assumed the title of duke of Bouillon. On the very evening of his nuptials, bidding adieu to his bride for a few hours, he hastened to the fortress of Stenay, which was held by the Lorrainers, and stormed it. "*Ventre Saint Gris*," said Henry, when he heard of that prowess, "I would make marriages every day if I could be sure of such wedding presents; I should soon get full possession of my kingdom." He afterward participated in the conspiracy of Biron, and fled to Geneva, where he remained till 1606. During the regency of Maria de' Medici, Bouillon engaged in the intrigues by which France was then troubled, sometimes siding with the queen, sometimes with her opponents; now supporting the Calvinists, then making peace with the court. Amid all political perturbations he established at Sedan a large library and a college, furnishing pensions to many illustrious Calvinists. After the death of his first wife he married Elizabeth of Nassau, daughter of William prince of Orange, by whom he had 2 sons, the younger of whom was the illustrious Turenne.

BOUILLY, JEAN NICOLAS, a French dramatist and novelist, born in 1768, died at Paris, April 14, 1842. The poems of many operas were composed by him, such as *Le jeune Henri*, by Mehul, the overture of which is considered a masterpiece of symphony, and *Les deux journées* of Cherubini. He is also the author of several comedies and dramas, and of several collections of tales for young persons, which was translated into German.

BOULAINVILLIERS, HENRI, comte de, a French historian, born in Normandy, Oct. 11, 1658, died Jan. 23, 1722. He asserted that France, as a nation, was indebted for its power to the feudal system, which, according to his

opinion, was the "masterpiece of human genius." His *Histoire de l'ancien gouvernement de la France* set forth this theory.

BOULAY DE LA MEURTHE, ANTOINE **JACQUES CLAUDE JOSEPH**, count, a French lawyer and politician, born Feb. 19, 1761, in Lorraine, died in Paris, Feb. 2, 1840. During the revolution he served as a volunteer in the army, and as a judge on the bench, until the reign of terror, when he was outlawed. After the 9th Thermidor, he was appointed presiding judge of the civil court, and afterward held the office of attorney-general at Nancy. He sat in the council of 500, was active in the *coup d'état* of the 18th Fructidor, and aided in the revolution of the 18th Brumaire. Being appointed chairman of the legislative section in the council of state, he took an active part in digesting the *code civil*. On the first restoration, he kept aloof from public affairs; during the Hundred Days, he was again a minister of state; on the abdication of Napoleon I. he caused his son to be proclaimed as Napoleon II., and was appointed minister of justice by the commission of government. He was, of course, outlawed by the returning king, and for 4½ years was an exile. In 1819 he was permitted to return to France.—**HENRI GEORGE**, count, son of the preceding, vice-president of the French republic of 1848, born July 15, 1797, at Nancy. He took an active part in the revolution of 1830. In 1837 he was elected to the chamber of deputies. In 1843 he voted for the repeal of the decree of banishment against the Bonaparte family. In Feb. 1848, he sided with the moderate republicans, was elected to the constituent assembly, and there again supported the motion for the return of the Bonaparte family. When Louis Napoleon was elected president, the name of Boulay de la Meurthe was placed by him at the head of the list of candidates for the vice-presidency; and the assembly almost unanimously chose him. After the *coup d'état* of 1851 he was made a member of the senate.

BOULBON, or **RAOUSSET-BOULBON**, **GASTON** **RAOULX**, comte de, a French adventurer, born in Avignon, in 1817, executed near Guayamas, Ang. 12, 1854. He repaired, in 1852, to California, where he induced a number of other adventurers to join him in an expedition to Sonora, after having squandered his estate in Paris and Algiers. Having overcome, at the point of the bayonet, the opposition of the Mexicans to his designs upon the gold mines, Boulbon became flushed by his temporary victory, and rallying round him 500 men, he seized Arispe, the capital of Sonora, and proclaimed a republic. Defeated by the Mexicans, Jan. 4, 1853, he returned to California, from whence he planned a new invasion in April, 1854, but again repulsed by the Mexicans, July 18, he was captured and put to death. Jules de la Madelène published an account of his life and adventures (Paris, 1855).

BOULEVARDS (originally bulwarks or ramparts), the famous public avenues in Paris. The

principal of them is the northern boulevard, forming a semi-circle of about 4 miles in length. The *Boulevard Italien* is the most celebrated for its brilliancy and fashionable appearance; and the *Boulevard du Temple* is the most popular boulevard, and remarkable for the number of small theatres which it contains. The *Boulevard Bonne-Nouvelle* and *Poissonnière* also present a constant appearance of bustle and animation. Among the more quiet and stately boulevards must be mentioned the *Boulevard des Capucines* and the *Boulevard de la Madeleine*. The *Boulevard de Sébastopol* was opened by Napoleon III., April 5, 1858.

BOULOGNE, or **BOULOGNE-SUR-MER**, a seaport town of France, department of Pas de Calais, situated on the English channel, near the mouth of the small river Liane. During the dominion of the Romans, it was, under the name of *Gessoriacum*, the port most frequented by travellers crossing to Britain, with which it already had considerable intercourse. Subsequently it was called *Bononia*, and finally *Bolonia*, whence the present name. During the middle ages, it was possessed by various princely houses, until it fell to that of Burgundy. On the death of Charles the Bold, in 1477, it was united to the French crown by Louis XI. In 1544, it was taken by King Henry VIII. of England, but surrendered to France 5 years later. Charles V. nearly destroyed it in 1553, after a siege of 6 weeks. Having been at various times the starting point of naval expeditions against Great Britain, Boulogne rose to celebrity in the beginning of this century, by being the centre of the tremendous armament prepared by Napoleon against that country. A magnificent column, 164 feet high, has been erected on a hill situated nearly a mile from the town, to preserve the memory of that great but futile effort. That period was the beginning of the prosperity of Boulogne, which was further enhanced by the return of peace. It was then much resorted to by English visitors and families, many of the latter having made it a permanent residence. It is divided into the lower and the upper towns. The latter, although irregularly laid out, is pretty well built, and contains 2 squares ornamented with fountains, a cathedral, an ancient episcopal palace, a city hall, and palace of justice. It is surrounded by ramparts, which have been transformed into beautiful promenades planted with trees, and affording a magnificent view that extends to the coast of England, which is distinctly visible in clear weather. The lower town, situated at the bottom of the hill, watered by the Liane, and laid out with great regularity, is the most populous and commercial. The bath house is a fine establishment. The general hospital, founded in 1692, the barracks, the public library (with 80,000 vols.), and the theatre, deserve also to be noticed. The port is difficult of access, and is left dry twice a day by the tide; and men-of-war have to moor in

St. John's roads, where they are perfectly safe and protected against western winds. The harbor was greatly improved by Napoleon, in 1804, when 2 large basins, connected by a quay, were constructed. The number of persons who disembark here annually is estimated between 100,000 and 150,000. A steamboat starts every day for Folkestone and Dover, 2 others, twice a week, for London and Brighton, and another once a week for Rye. There are 4 trains daily on the northern railway, which takes 6 to 8 hours to go from Boulogne to Paris. The foreign trade is considerable. Almost all the 1,800 vessels belonging to Boulogne are engaged in the fish trade; the herring, mackerel, and cod fisheries, are vigorously prosecuted, while the town has manufactures of coarse woollen goods, sail-cloth, bottles, and earthenware for the colonies, with tanneries, ropewalks, &c. The Boulogne fishing boats are the largest and best in the channel. The fishermen occupy a separate part of the town, are in dress and manners distinct from the rest of the population, speak a distinct patois, and rarely intermarry with the other townsfolk. There are various establishments of learning, societies of agriculture, commerce, art, and science; a museum of antiquity and natural history, a free school for navigators, 2 English chapels, an English reading-room, and numerous boarding-schools for girls and boys, many of them under English principals. Le Sage, author of "Gil Blas," died here in 1747, in a house No. 3, rue de Ohâteau; and the English poet Campbell's death occurred here in 1844. Pop. in 1856, 82,742, among whom are about 7,000 permanent English residents.

BOULOGNE, Bois de, a public park, about 2 miles from Paris. It was of old a hunting ground for the French kings, and became fashionable in the 18th century. In it was situated the abbey of Longchamp, where a melodious choir of nuns attracted the attention of amateurs, particularly during Passion week. The Longchamp pilgrimage, as it was called, was interrupted by the revolution; but after the 18th Brumaire, the place again became a favorite walk and drive. On the approach of the allied armies in 1814, great numbers of trees were felled to make palisades. The place was bought in 1852 by the municipality of Paris, and has undergone a transformation at the hands of a landscape gardener. The inclosure, which is now no less than 6 miles in circumference, contains an artificial river nearly 2 miles long, fed by a powerful steam-engine from the Seine. The scenery is otherwise charming, and the views from different points are admirable. The wall which surrounds this park has 11 gates.

BOULOGNE, CAMP DE. Such is the common appellation of the large and powerful armament raised from 1803 to 1805 in the vicinity of Boulogne, by Napoleon Bonaparte, with the design of invading England. After his election as first consul, he took up the plan devised

by the directory to threaten England with invasion; the preparations, which had been going on around Boulogne, were prosecuted; the fleet, mostly consisting of flat-boats suitable for a landing, was reinforced; fortifications along the coast repaired, and troops encamped in the vicinity. The English government ordered Nelson to that coast, who arrived off Boulogne Aug. 4, 1801, and attacked the French vessels, under Latouche Treville, and again on the 15th and 17th, but without success. The peace of Amiens did not last long enough to disband either the French troops or the naval forces; and on the outbreak of new hostilities, the project of invading England was revived and energetically carried forward. The departments and cities of France, taxing themselves according to their capacity, presented the first consul with large sums of money, ships, guns, and ammunition. The city of Paris voted a ship of 120 guns; Lyons one of 100; Bordeaux one of 80; Marseilles one of 74. The department of Gironde subscribed over \$300,000 in addition to the ship from Bordeaux; the others from \$40,000 to \$200,000 each. The department of Côte d'Or sent 100 pieces of ordnance from the Creuzot foundry. Private citizens also contributed largely; and the Italian republic gave 4,000,000 livres, to be employed in the building of 2 frigates and 12 gunboats. The whole contribution amounted to \$3,000,000, which, added to \$14,000,000, the net proceeds of the sale of Louisiana to the United States, furnished ample means for the purpose. Several camps were fixed at points in the vicinity of the northern sea, the British channel, and the Atlantic, the principal of which was near Boulogne, the centre and starting point of the projected expedition. This was laid out with the regularity of a town; it consisted of frame houses forming streets, thoroughfares, and squares, ornamented with fountains and other monuments. Beside regular drillings and exercises, the soldiers were employed in various works of fortification or construction. They were ready for embarkation at any moment. The port of Boulogne, as well as those of Etaples, Vimereux, and Ambleteuse, had been enlarged, deepened, and improved, and fortifications were erected along the coast, and protected by formidable artillery. In spite of the efforts of the English, the numerous vessels which had been built at the several ports of France and Holland, succeeded in reaching the harbor of Boulogne. Beside ordinary ships, they consisted of gunboats, gun-barges, and pinnaces, all of very light draught, particularly the last. The gun-boats, however, carrying 4 guns and half a company of soldiers, were also intended for fighting, 500 being equal to 26 ships of 100 guns. The whole fleet numbered from 1,200 to 1,500 crafts, capable of carrying 120,000 troops. It was to sail from Boulogne, while squadrons would also start from Brest and Texel. It was calculated that the whole force, amounting to 150,000 men, could be landed in a few hours on the English shore.

In August, 1804, every thing was ready for embarkation. Napoleon, lately proclaimed emperor, repaired in state to Boulogne, and, seated on a throne, surrounded by his princes and marshals, his face turned toward England, distributed to his soldiers crosses of the legion of honor and banners. The troops were partly on board the barges and pinnaces; the rest could be embarked in less than 2 hours; and for the last signal, Napoleon only waited for Admiral Villeneuve, who, after a cruise in the West Indies, where he had successfully avoided the chase of Nelson, had set sail for Europe, and was to reach the entrance of the English Channel, and there keep the English fleet at bay, or fight it, if necessary, in order to give time to the Boulogne armament to cross to England and land. But while Napoleon was impatiently looking for Villeneuve, the latter had encountered the English admiral Calder, opposite Ferrol, and, although not unsuccessful, instead of keeping on his course toward the north, had put into Vigo. When, after long days of anxiety, Napoleon learned at last that Villeneuve was not coming, that the English fleet was cruising within the strait, and all hope of now successfully attacking England was gone, he turned toward continental Europe; and, sending his army through Germany, undertook that campaign which was marked by the victory of Austerlitz and the taking of Vienna, and ended with the treaty of Presburg. From England Admiral Keith was sent with a number of fire ships to burn the Boulogne fleet. On Oct. 8, he was off the port and made his first attempt, but was repelled by the French. For two days the struggle continued; on the night of the 4th the sea itself seemed on fire. Keith was compelled to retire, having caused but comparatively trifling damage. Events did not allow Napoleon to renew his project; but he was reluctant to give it up; he entertained it as late as 1805, and often regretted in after-days that fate had not permitted him to carry it through. A column half a mile from Boulogne is now the only material record of this famous camp.

BOULONNAIS, a district of France, the chief town of which is Boulogne, in the ancient province of Picardy, now a part of the department of Pas de Calais.

BOULTER, HUGH, archbishop of Armagh, Ireland, born in London, Jan. 4, 1671; died there in Sept. 1742. On leaving Oxford, he was successively chaplain to the archbishop of Canterbury; rector of St. Olaves, Southwark; archdeacon of Surrey; chaplain to George I., and tutor to Frederic, prince of Wales. He was made bishop of Bristol in 1719, at the same time obtaining the deanery of Christ Church, Oxford. In 1724 he was made archbishop of Armagh, and "primate of all Ireland." He expended £30,000 in augmenting the incomes of the poorer clergy; erected and endowed hospitals at Armagh and Drogheda for the reception of clergymen's widows;

largely contributed to the establishment of Protestant charter schools; and during the great famine of 1740, provided, at his own expense, 2 meals a day for 2,500 distressed persons. For 19 years he filled the office of lord justice of Ireland.

BOULTON, MATTHEW, an English engineer, born at Birmingham, Sept. 8, 1728, died at Aston Hall, near Birmingham, Aug. 17, 1809. Having received a good plain education, which included drawing and mathematics, he joined his father in the manufacture of hardware, and at an early age discovered a new process for inlaying steel in shoe-buckles, watch chains, buttons, &c., which articles, exported to the continent, were sold there to English travelers, as the fruit of French ingenuity. The death of his father gave him ample means to extend his business, and, in 1762, having purchased a large tract of barren heath, at Soho, near Handsworth (one of the suburbs of Birmingham), he expended a large sum in erecting the works still known as the Soho manufactory, capable of employing 1,000 workmen. Having only an inadequate supply of water-power, Mr. Boulton constructed a steam-engine, in 1787, on the original plan of Savery. Two years afterward, he entered into partnership with James Watt, and the Soho steam-engine, gradually improved and simplified, became known all over Europe. Its powers were first applied to the purpose of coining in 1788, from 80,000 to 40,000 milled coins being struck off in an hour. Boulton and Watt sent two complete mints to St. Petersburg, and for many years executed the entire copper coinage of England. Mr. Boulton expended £47,000 on the steam-engine, before Watt had so completely constructed it that its operation yielded profit. One of the Soho inventions was a method of copying oil paintings. Mr. Boulton also patented a discovery of raising water and other fluids by impulse. He was extremely well informed, and had great conversational powers. It was to James Boswell, who visited Soho in 1776, and not to George III. (as commonly reported), that he said, "I sell here what all the world desires to have, power."

BOUNTY, a premium given by governments for the encouragement of special branches of industry or invention, or of particular enterprises which are thought to be of national importance.

BOURBON, a county of Kentucky, area about 800 sq. m., bounded on the N. E. by the South Licking river, and drained by Hinkston, Stoner's, and Stroad's creek. The surface is gently undulating, and the soil, of fine limestone derivation, is remarkably rich, producing large quantities of corn, and affording pasturage to extensive flocks of sheep. Lead ore is found in small quantities; sulphur and chalybeate springs are numerous. One of those curious monuments of the aboriginal tribes, which occur throughout the Mississippi valley, has been discovered on Stoner's creek, at the mouth of Flat Run, in this county. It is apparently a work of de-

fence, and consists of an earthen wall 3 or 4 feet high, enclosing an area of 21 acres, within which are a number of mounds, excavations, and about 20 raised outlines, 2 or 3 feet broad and 1 foot high. Outside the wall are 14 structures similar to those within. This county, which forms part of the region called the "Garden of Kentucky," was organized in 1785, and named after the royal family of France. In 1850 it yielded 1,705,599 bushels of Indian corn, 78,183 of wheat, 180,582 of oats, 78,621 pounds of wool (the greatest quantity produced by any county of the State), and 1,205 tons of hemp. There were 9 corn and flour mills, 7 saw mills, 8 woollen factories, 1 cotton factory, 28 churches, 1 newspaper office, and 281 pupils attending public school. Value of real estate in 1855, \$7,737,017. The capital is Paris, and the population amounts to 14,466, of whom 7,066 are slaves.

BOURBON (Fr. *Ile de la Réunion*, or *Ile Bourbon*), an island of the Mascarene group, in the Indian ocean, under the sway of France. It is 38 miles in length and 28 in breadth. Pop. 115,000, of whom about 65,000 were formerly slaves (59,115 employed on the plantations). The isle of Bourbon was discovered by the Portuguese navigator Mascarenhas, in 1645, and received the name of its discoverer. In 1642 the French took possession of it, and formed a permanent colony in 1649, when the name of Bourbon was given to the island. During the revolution, and under the empire, it was called Réunion, and *Ile Bonaparte*. The English seized it in 1810, but restored it to France by the treaty of Paris, April 2, 1815. In 1848 the name was again changed from Bourbon to Réunion. The island has been formed from 2 volcanoes, one of which, called Le Gros Morne, has long been extinct; the other, the Piton de la Fournaise, is perpetually emitting either smoke or flame. The principal rivers are the St. Etienne, Galets, Mâts, and Marsouins. There are no extensive plains; the entire surface is covered with mountains (of which the Piton de Neige is the highest), between which lie narrow valleys. The soil, save in the vicinity of the coast, is sterile, and the inhabitants are obliged to depend in great measure upon imports for their subsistence. The most important production of the island is sugar. Coffee, cloves, dye-woods, and saltpetre are also exported. Corn is raised, but in very small quantity. The climate has recently undergone a great change. Once reputed the most healthy colony in the world, Bourbon is now visited by a bloody flux and typhoid fever, which attack every European after a residence of 4 or 5 years. Yellow fever, however, is unknown. Earthquakes are never felt, but the island is subject to violent hurricanes, which do great injury to houses, animals, and men. The temperature is more moderate than is usual in these latitudes. The rainy season lasts from November till April, and it is winter from May till October. Bourbon island possesses no good port, and anchorage is

insecure. St. Denis is the capital. The colonial council is composed of 80 members, who are chosen for 5 years, and the island sends 2 delegates to Paris. Imports in 1854, \$5,850,000; exports \$3,250,000; reexports, \$350,000. Total value of imports and exports, \$8,950,000. The arrivals of vessels were 131—94 from France, 80 from French colonies, 7 from foreign ports. Clearances 148—94 to France, 42 to French colonies, 7 to foreign ports. The coasting trade for 1854 was to the extent of \$6,700,000, showing an increase of nearly 17 per cent. over the preceding year, and employing 342 vessels, of which 189 entered, and 153 left the port.

BOURBON, the name of a French royal family which traces its origin to Louis IX., and since the beginning of the 14th century has played a conspicuous part in the annals of its own country, and more recently of Europe. For the sake of clearness, it is necessary to distinguish the ducal family and the royal dynasties proceeding from it. I. DUCAL FAMILY. The fief of Bourbon, now called L'Archambault, seems to have been in existence as early as the 9th century, when it was in the possession of Adhemar, who, according to genealogists, descended from Hildebrandt, brother of Charles Martel, and who transmitted it to his progeny. In 1218 it came by marriage to Guy of Dampierre, whose family held it until 1272, when Beatrice, the only heiress, married the 6th son of King Louis IX., Robert, count of Clermont, who thus became the head of the great family of Bourbon. The fief was then only a seignory, and was erected into a dukedom by Charles IV. for Louis, son of Robert and Beatrice, who, in 1297, assumed the title of duke. He left 2 sons: Pierre I., the elder, who continued the ducal dynasty, and Jacques I., count of La Marche, the younger, whose descendants were destined to become kings of France, Spain, Naples, and Parma. The second duke, Pierre I., was killed at Poitiers.—His son, Louis II., distinguished himself during the reign of Charles V. in the war against the English, was appointed guardian of the duke of Orleans, 2d son of that king, who also appointed him, conjointly with Philip the Hardy, duke of Burgundy, to superintend the education of the young king Charles VI. He won the esteem of Charles, who had married his sister, and used all his efforts to prevent the troubles during the reign of his nephew; but though a man of some ability, he was unequal to the task. He successfully led a crusade against the pirates of Tunis in 1391, and died in 1410. He was the true founder of the greatness of his house. To the duchy of Bourbon and county of Clermont he added, through his 2 marriages, or by purchase, the duchy of Auvergne, the county of Montpensier, the principality of Dombes, and several other minor feudal estates; so that he became one of the most powerful vassals of the crown, his possessions extending from the banks of the Oher to those of the Rhone, and from the

southern boundaries of Burgundy to Languedoc.—Jean I. succeeded his father Louis II.; was taken prisoner at the battle of Agincourt, and brought to England; paid his ransom 8 times without being able to obtain his liberation; and at last, in the hope of being more successful, concluded a treaty by which he gave up to the English king the principal strongholds of his duchy, at the same time acknowledging Henry VI. as king of France; but his son, the count of Clermont, declined to abide by these terms, and the unhappy duke died in 1434 at London.—Charles I., known until his father's death as count of Clermont, did good service to the French king against the English, and was one of the negotiators of the treaty of Arras between Charles VII. and the duke of Burgundy in 1435. He subsequently engaged in the revolt known as *la Praguerie*, but soon made his peace with the king, a daughter of whom his son, the count of Clermont, afterward married. He died in 1456.—Jean II., son of Charles I., proved a faithful servant to Charles VII. of France, but entered the "League of the Public Weal" against Louis XI. By the treaty of Conflans he obtained the most favorable terms, being successively appointed governor of Languedoc, knight of St. Michael, and lastly grand constable of France.—On his death in 1488, the duchy should have fallen to his 1st brother, the archbishop of Lyons; but his 2d brother, Pierre II. of Beaujeu, got possession of it. He married Anne, daughter of Louis XI. of France. On the death of that king, Anne governed under the name of her brother, Charles VIII. She had but one daughter, Suzanne, whom she married to her cousin, Charles of Montpensier, the last duke of Bourbon, better known as the constable of Bourbon. He belonged to a younger branch of the family, and by his marriage with the heiress of the elder, became the most wealthy prince in France; he was, moreover, appointed grand constable by Francis I., and thus ranked in power next to the king. Although his wife was still living, Charlotte of Savoy, mother of the king, fell in love with him; but he repelled her approaches, and she became his irreconcilable enemy. The constable was deprived of his pensions, which amounted to the then enormous sum of 76,000 livres; and on his wife's death, as she had left no child, Charlotte claimed the Bourbon estates as the nearest heiress, and a lawsuit was brought against him before the parliament. A judgment was rendered in her favor, and Bourbon entered into secret negotiations with the emperor Charles V. and King Henry VIII. of England. It was agreed that a kingdom should be created for the constable in south-eastern France, and the remainder of the country given up to the other confederates. Francis I. was informed of the plot, and Bourbon fled in disguise and raised in Germany 6,000 soldiers, with whom he entered the service of the emperor. He

contributed greatly to the victory of Pavia, where Francis I. was taken prisoner. However, he was not treated by the emperor with the regard which he anticipated; and being at the head of a body of German mercenaries, who, for months, had received no pay, he was obliged to lead them against the city of Rome, before which he appeared May 6, 1527. The troops were eager for the promised pillage, and the attack commenced at once. Bourbon, while scaling a wall, was shot by a culverin; and the soldiers, infuriated by the death of their commander, stormed the city, which for 2 months was given up to pillage and bloodshed. The body of Bourbon was taken to Gaeta, where a monument was erected to his memory; while the French parliament ordered the threshold of his hotel at Paris to be painted of a yellow color, to make known to posterity that the traitor had died, bearing arms against his native country. II. ROYAL DYNASTIES OF BOURBON.—*France*. The head of the younger branch of the Bourbons, which gave kings to France, was, as we have said above, Jacques, count of La Marche, 2d son of Louis, 1st duke of Bourbon. The 6th descendant of Jacques, Antoine of Bourbon, duke of Vendôme, married Jeanne d'Albret, the heiress of Navarre, by whom he had a son, Henri, prince of Béarn, born in 1553, who succeeded his father in 1562, and, in 1589, on the death of Henri III., the last prince of the Valois family, was the heir-apparent to the crown of France. Henri the Béarnais, as he was scornfully called by the Catholics, made his claims good by courage, energy, and perseverance. At last, in 1594, he was acknowledged king of France as Henri IV.; and after a reign, during which he succeeded in restoring peace to his country, he was assassinated in 1610 by Ravallac. Six of his descendants in the direct line occupied the throne after him: Louis XIII., 1610-1643; Louis XIV., 1643-1715; Louis XV., 1715-1774; Louis XVI., 1774-1793; Louis XVIII., 1815-1824; and Charles X., 1824-1830. The reign of Louis XIV. lasted 72 years. This prince's son and grandson died before him; and he was succeeded by his great-grandson, then a child. Their 2 successive reigns covered together nearly a century and a half. The disorders and corruption which prevailed during the latter part of that period prepared the French revolution, to which Louis XVI. fell a victim. For more than 20 years his brothers were exiles from France; they returned to their country under the protection of foreign armies. Hence the comparative unpopularity of Louis XVIII. and Charles X., which caused at last the overthrow of the latter in 1830. The younger branch, known as Bourbon-Orléans, traces its origin to Philippe, duke of Orleans, the brother of Louis XIV. It ascended the throne in 1830 in the person of his 4th descendant, who was styled Louis Philippe I., king of the French. He reigned 18 years, and lost his crown in the revolution of February, 1848.

His living sons are the dukes of Nemours, Aumale, Montpensier, and the prince of Joinville.—*Spain*. On the death of Carlos II., the last prince of the Austrian house of Spain, the crown devolved on Philip, duke of Anjou, grandson of Louis XIV., who reigned as Philip V., 1700–1746, and whose successors were: Fernando VI., 1746–1759; Carlos III., 1759–1788; Carlos IV., 1788–1808; Fernando VII., 1814–1833; and Isabella II., who is now in her 29th year. She married, when 16 years old, her cousin Don Francisco de Assis-Maria, by whom she has had only daughters; the heiress-apparent is Maria Isabel Francisca de Assis Christina Francisco de Paula, princess of Asturias, born Dec. 20, 1851.—*Naples*. Don Carlos, the 3d son of Philip V., king of Spain, obtained in 1736 the kingdom of the Two Sicilies, which he kept until 1759, when he ascended the throne of Spain as Carlos III., transmitting his Italian crown to his 3d son, Ferdinando I. From him the Two Sicilies have derived their separate family of sovereigns. He reigned no less than 66 years, and was succeeded by his son Francesco I., 1825–1830, who was the father of Ferdinando II., king since Nov. 8, 1830.—*Parma*. This is also a branch of the Bourbon family of Spain. The infante Don Carlos, before becoming king of the Two Sicilies, had been for a time duke of Parma. In 1748, by the treaty of Aix la Chapelle, his younger brother Filippo, son-in-law of Louis XV. of France, was invested with the duchy of Parma, which he transmitted to his son Ferdinand, whose heir was Ludovico I. The last named, in 1802, exchanged his duchy for Tuscany, which had been erected into a kingdom under the name of Etruria. His son, Ludovico II., succeeded him in 1803, under the guardianship of his mother, Maria Luisa, daughter of Charles IV. of Spain. In 1807, the same princess, on the promise by Napoleon of another kingdom in Portugal, consented to a resignation for herself and son; but the promise was never fulfilled; and they had to be contented in 1815 with the hereditary duchy of Lucca. In 1847, Ludovico II. was again put in possession of the duchy of Parma, by the death of Maria Louisa, late empress of the French. In 1849 he abdicated in favor of his son, Carlo III., who had, in 1847, married a French princess, Louise Marie Thérèse, daughter of the late duke of Berry. On the assassination of Carlo III., in 1854, his son, Roberto I., was proclaimed duke, under the guardianship of his mother, a function she still discharges.—Among the ducal houses deriving their origin from the royal Bourbon family of France, those of Condé and Conti deserve notice. The head of the former was Louis I., prince of Condé, younger brother of Antoine de Bourbon, king of Navarre; its most illustrious member was Louis II., called the great Condé, under the reign of Louis XIV.; the last of the Condés was hanged in his room, Aug. 27, 1830. The Contis were a younger branch of the Condé

family; they began with Armand de Bourbon, brother of the great Condé, and became extinct in 1814.

BOURBON, LOUIS HENRI, duc de, the great-grandson of the great Condé, born in 1692, at Versailles, died at Chantilly, Jan. 27, 1740. After the death of Louis XIV., he was nominated member of the board of regency, and on the death of the regent, Philip of Orleans, appointed prime minister. Like his ancestors, he was extremely rapacious—obtained large sums from the public treasury, was involved in the schemes of Law, associated in many of the financial transactions of the brothers Paris, and thus succeeded in increasing his patrimony. In 1726 he was exiled from the court, and devoted himself to chemistry and natural philosophy.

BOURBON, LOUIS HENRI JOSEPH, duc de, the last prince of Condé, born Aug. 13, 1756, died Aug. 27, 1830. In his youth he fought a duel with Count d'Artois, afterward Charles X., which caused great scandal. He served in the war between the English and French, and was wounded in 1782, at the siege of Gibraltar. He was among the first noblemen to emigrate from France, at the outbreak of the revolution, and served in the *armée de Condé*, commanded by his father. He returned to France on the restoration, recovered the most of his hereditary fortune, received the title of grand master of the royal household, and spent nearly all his life in the country, addicted to hunting, a pleasure he was very fond of. He had then as his mistress the baroness de Feuchères, who was in the interest of the Orleans family, and, as he had no offspring, induced him to settle his fortune upon the duc d'Aumale, Aug. 30, 1829. When the revolution of 1830 occurred, pitying the misfortunes of Charles X., the duke intended to cancel his will, and to give all his fortune to the exiled king. But on Aug. 27, 1830, he was found hanging by the neck, in his room at his chateau of St. Leu, under rather mysterious circumstances, which were interpreted in a very discreditable manner against the baroness de Feuchères and the Orleans family. A legal investigation was entered upon, but it cast no light upon the matter, and it was judicially admitted that the duke had committed suicide.

BOURBON L'ANNOY, a French watering place, pop. 3,160, department of Saône-et-Loire. Its mineral springs, which are employed in nervous affections and rheumatism, were known to the Romans, under the name of *Aque Nivini*.

BOURBON L'ARCHAMBAULT, a town of France, pop. 3,094, department of Allier, 18 miles west of Moulins, celebrated for its mineral springs and baths, said to be of great efficacy in cases of paralysis, rheumatism, and gun-shot wounds.

BOURBONNAIS, an ancient province of France, situated about in the centre of that country, between the rivers Loire and Cher. It belonged for centuries to the ducal house of

Bourbon; was confiscated in 1523, by Francis I., and united to the crown in 1531. Its chief town, when a duchy, was Bourbon l'Archambault—when a royal province, Moulins, on the river Allier. It forms now the whole of the department of Allier, and a small part of that of Cher.

BOURBONNE-LES-BAINS, a town of France, pop. 8,700, department of Haute Marne, 21 miles E. N. E. of Langres, with hot springs, which were resorted to by the Romans. The heat of the water varies from 40° to 52° Réaumur, or from about 120° to 156° Fahrenheit. It is principally employed in cases of paralysis and rheumatism, spasms, and ill-reduced fractures.

BOURCICAULT, DION (more correctly written **BOUICAULT**), a British dramatic author and actor, born in Dublin, Dec. 26, 1822, 4th son of S. Bourcicault, a French refugee, and banker and merchant in that city. Sent to England to be educated as a civil engineer, under the guidance of Dr. Lardner, he deserted Euclid for Shakespeare, and, on March 4, 1841, being scarcely more than 18 years of age, he produced the comedy of "London Assurance," at Covent Garden Theatre. The success of this work decided the destiny of the young engineer. During the 10 years which succeeded, he successively produced "Old Heads," "Love and Money," "The Irish Heiress," "Love in a Maze," and upward of a hundred pieces, either original or translated from the French, including the "Corsican Brothers," the "Willow Copse," "Janet Pride," the "Phantom," "Faust and Margaret," &c. His merit as a dramatist consists in constructive power, knowledge of stage effect, and epigrammatic dialogue. His demerit is that he writes rather from his experience than his imagination, and prefers to make a successful, rather than to risk an original play. In September, 1853, he quitted England for the United States, and made his debut as a lecturer in New York on the following December, but soon relinquished the desk for the stage. As an actor Mr. Bourcicault is chiefly known by his Grimaldi in "The Life of an Actress," Sir Charles Coldstream in "Used up," and the "Phantom." His wife, known as Miss Agnes Robertson, is a very popular actress, and excels particularly in the personification of soubrette characters. Her last and perhaps her best performance is in "Jessie Brown,"—a play written by Mr. Bourcicault.

BOURDALOUE, LOUIS, one of the most eloquent of the French preachers, born at Bourges, Aug. 20, 1632, died in Paris, May 18, 1704. At an early age he entered the college of the Jesuits in his native place, and was soon distinguished for his proficiency in the various branches of learning taught by that society. It was not long, indeed, before he was intrusted with the professorship of rhetoric, philosophy, and moral theology, in which he displayed remarkable capacity for oral instruction, as well as great energy of character. His success in the chair,

perhaps, directed his attention and hopes to the pulpit, in which he first appeared in the provincial churches, where he enlisted the admiration of a grand-daughter of Henry IV. to such an extent, that on her death-bed she put his services into requisition. In 1669 he received a call to Paris, where his fertility and depth of thought, combined with the graces of his elocution, rendered him immediately popular; and, what was more important in those days of absolute kingcraft, attracted toward him the attention of Louis XIV. That monarch became a personal attendant upon his ministry, and on many different occasions invited him to preach the festival sermons before the court at Versailles. In an age of brilliant literature, when Corneille, Racine, and other classic dramatists, were charming society from the stage; when Turenne was dazzling the world with his military genius; when Bossuet was filling the church with a blaze of glory, it is to the honor of Bourdaloue that he made himself a celebrity, not by any meretricious tricks of style, or by eccentricity of manner, but by the solid dignity of his thought, and his fervid, yet chastened religious eloquence. He became, to some extent, a reformer of the somewhat theatrical oratory of the sacred desk, and restored its ministrations to greater simplicity, directness, and sincerity. For 20 years he continued a favorite of the French metropolis. When Louis XIV. repealed the act of toleration, known as the edict of Nantes, Bourdaloue was sent to Languedoc, in order to reconcile the Protestants to that measure, and discharged the functions of his ungracious office with skill and self-respect. In his latter days, Bourdaloue surrendered the ministrations of the pulpit, to a large extent, for the sake of engaging in the more active duties of charity. He connected himself with hospitals and prisons, where he showed an energy in alleviating material maladies, as disinterested and strenuous as his efforts in removing moral maladies had been distinguished. He was everywhere received and blessed as a friend. His sermons, often published during his lifetime, have been translated since into many foreign languages. The edition of them by Father Bretonneau, in 16 volumes, is generally considered the most complete and valuable. Among the modern editions, that of Didot, of 1840, in 8 royal octavo vols., must be mentioned. The 6th volume of a new German translation, begun in 1847, appeared at Ratisbon in 1850.

BOURDON, PIERRE LOUIS MARIE, a French mathematician, born at Alençon, July 16, 1799, died in Paris, March 15, 1854. He was successively professor of mathematics at Saint Cyr, in the lyceum of Charlemagne, and in the college of Henry IV. At his death he held the office of inspector in the university of Paris. He published a "Treatise on Mechanics," Paris, 1811; "Elements of Arithmetic," 1821, which has reached its 21st edition; "Application of Algebra to Geometry," 1824, and "Elements

of Algebra," 1848, which has reached its 9th edition, and the adaptation of which by Professor Davies has been greatly used in the United States.

BOURDON, SÉBASTIEN, a French painter and engraver, born at Montpellier in 1616, died in Paris in 1671. At Rome he was the friend and disciple of Andrea Sacchi and Claude Lorraine. The "Crucifixion of St. Peter," in Notre Dame, Paris, is by many considered his masterpiece. In 1652 he went to Sweden, where he became the principal painter at Queen Christina's court. While there he declined to receive from the queen a gift of a fine collection of pictures, of whose value he saw that she was entirely ignorant. This afterward became the celebrated Orleans collection.

BOURG, ANNE DU, a French Protestant, born in 1521 at Riom, executed in Paris, Dec. 20, 1559. Having at first taken holy orders, he quitted the clerical for the legal profession, greatly distinguished himself as a teacher of the latter at Orleans, and in 1557 was appointed counsellor to the parliament of Paris. On a visit paid by King Henry II. to that body, Du Bourg, in company with Du Faur, one of his colleagues, was bold enough to undertake the defence of the reformers, whose loyalty and virtue he praised. The king had Du Faur and Du Bourg immediately arrested and taken to the bastille by Constable Montmorency. Du Bourg's defence was skilfully conducted; the elector of Saxony made efforts to save him, but all was in vain: the court was bent on his condemnation, which was made still more certain by one of his judges being assassinated during his trial. The sentence of death was passed on him; he was hanged in the Place de la Grève, and his body burnt.

BOURG-EN-BRESSE, capital of the French department of Ain, on the Reyssouse, 21 miles E. S. E. of Mâcon. Pop. 12,068. Having been a place of some importance under the Roman empire, it afterward belonged to the old Burgundian kingdom, passing with it into the hands of the German emperors. Toward the end of the 11th century it passed to the house of Savoy, and in 1601 was ceded to France. The streets are narrow and crooked; many of the houses are built of wood; but it possesses some beautiful edifices; and the cathedral, the city hall, and the monuments in honor of Joubert and of Dr. Bichat, are much admired. In its vicinity is to be seen the church of Brou, with the tomb of Margaret of Austria, Margaret of Bourbon, and Philibert of Savoy. The town has also a botanical garden, and a library of 19,000 vols. Lalande the astronomer was born here.

BOURGADE, FRANÇOIS, a French missionary in Algeria, born at Ganjou, in 1806. In 1838 he obtained from Rome permission to exercise the priesthood in all the French possessions in Algeria. He visited the hospitals of Danaovada and Boofareek, and founded at Tunis a hospital for poor women, and schools

for girls. An accomplished Arabic scholar, he made valuable antiquarian researches, and has published a number of Punic inscriptions.

BOURGELAT, CLAUDE, the father of veterinary schools in France, born at Lyons in 1712, died in 1799. He first studied law, and began to practise as an advocate, but having gained an unjust suit for his client, conscientious scruples forced him to abandon that profession. He then served in the army, and being joined to the cavalry, soon learned to entertain an unusual affection for horses, and became very skilful in their treatment. Veterinary science did not yet exist in France, and Bourgelat entered with spirit upon the large field of observations which his position in the cavalry laid open to him. After several years of study and preparation, he opened in 1722 a veterinary school at Lyons, which soon received the title of the royal school, and became known throughout Europe. He wrote numerous works upon veterinary subjects, which are still valuable, corresponded with the most distinguished scientific men of his age, and at the time of his death was member of the academy of sciences of both Paris and Berlin.

BOURGEOIS, DOMINIQUE FRANÇOIS, a French machinist, born in Chatelblanc (Franche-Comté) in 1698, died in Paris, Jan. 18, 1781. He first served in the workshop of a clock-maker, and then in that of a locksmith. He made a celebrated automaton in the shape of a duck swimming on water. Then he invented a lantern which was approved by the academy of sciences. In 1766, the academy adjudged to him the special prize for the best mode of lighting a great city. In 1778 he constructed a beacon whose light was visible at the distance of 10 miles even during stormy weather, and in 1778 he constructed another improved one for lighting the harbor of St. Petersburg. He died in the utmost poverty.

BOURGEOIS, SIR FRANCIS, a painter of Swiss extraction, born in London in 1756, died in 1811. He was made a royal academicien in 1792, and in 1794 received the appointment of landscape painter to the king.

BOURGES, capital of the French department of Cher, 124 miles south of Paris, on the canal of Berry and the central railroad, in an extensive plain, at the confluence of the Auron and the Yèvre. Pop. 28,167. When the Romans invaded Gaul, it was known as Avaricum, the capital of the Biturigesoubi. It was taken by Cæsar, 52 B. C., and almost all its inhabitants slaughtered. Under the name of Bituriges, it was for 475 years the metropolis of Aquitania. During the middle ages, many councils were held here. The French clergy assembled here in 1438 to receive the famous charter known as the pragmatic sanction, by which the liberties of the Gallican church were secured. Jacques Cœur and Louis XI. were both born here. The former established here in 1463 a university, where Cujas taught during the 16th century. Bourdaloue, the

famous preacher, was born here in 1682. Don Carlos resided here from 1839 to 1845, when he signed the abdication in favor of his son. The trial of Louis Blanc, Albert, and others, took place before the supreme court at Bourges, March 7 to April 2, 1849. The city is partly surrounded by a thick wall, flanked with lofty towers; its streets are irregularly laid out, while the houses are generally mean-looking, with their gables to the street. Among the old buildings which it contains are the magnificent cathedral, larger than Notre Dame de Paris, and one of the finest Gothic monuments of Europe; the city hall, built at great cost by Jacques Cœur as a dwelling-house; the palace and the garden of the archbishop. The house of Cujas is now used as a barrack. The establishments of public instruction, including the imperial college, the theological seminary, and the normal school, are well patronized. Bourges has manufactories of fine and coarse cloths, hosiery, cutlery, and porcelain in the vicinity.

BOURGUET, LOUIS, a French naturalist and archæologist, born at Nîmes in 1678, died at Neufchâtel, Dec. 31, 1742. When 19, he travelled in Italy, where he collected medals and remains of ancient times, shells, fossils, and books. Within 20 years he completed 5 other journeys to the same country, by which he largely increased his collections. His writings have contributed to the progress of natural philosophy and archæology. His explanation of the old Tuscan alphabet, which he demonstrated to be Greek, has secured his fame among archæologists.

BOURIGNON, ANTOINETTE, a Flemish visionary, born Jan. 13, 1616, at Lille, died Oct. 30, 1680, at Franeker. She was born so ugly that her parents held a consultation to determine whether it would not be better to destroy her as a monster. She was spared, but her infancy was spent in neglect and solitude. The first books she put her hands on, were lives of early Christians, and mystical tracts, which she read eagerly. Notwithstanding her ugliness, as she belonged to a rich family, she had suitors; indeed, she was on the eve of being married to a young man who had been accepted by her parents, when she made her escape in man's clothes, and took refuge in a convent. There she made proselytes; but her doctrines not being in accordance with the rules of the house, she was expelled from the town, and resolved to diffuse her new creed in the surrounding country. In 1648 her father died, and she returned to Lille. Her wealth called around her a crowd of new suitors; two of whom were so ardent and importunate, that she had to seek the protection of the police. She had meanwhile been appointed to the charge of a hospital; but here again her preaching created disorder, and the police were summoned to expel her from her native city. Then she resumed her mission, and in the dress of a hermit wandered about the northern part of France, the Netherlands, Holland, and Den-

mark. When at Amsterdam, she made a formal renunciation of the Roman Catholic doctrines, in order to be more at liberty to preach her own. The true church, she asserted, was extinct, and her mission from God was to restore it. She did not require any external ceremony, as worship should be wholly interior; the written law, insufficient for salvation, was to be replaced by direct inspiration. She was very active and eloquent, and her doctrines spread rapidly. During her sojourn at Amsterdam, she undertook the printing of her works, by a private press she carried with her for that purpose; but this plan was frustrated. She was charged with sorcery by the mob, who pillaged her house. Although she was very wealthy, she never gave any thing to the poor, fearing, she said, that they would make a wrong use of alms; but she bequeathed all her property to a hospital. Poirêt, a mystical Protestant divine, wrote her life and reduced her doctrines into a regular system. He superintended the publication of her complete works, in 21 vols. 8vo. One of her tracts, *La lumière du monde*, was translated and published in England; her tenets were for a while popular in Scotland.

BOURKE, SIR RICHARD, a British general, born in Dublin, May 4, 1777, died near Limerick, Aug. 13, 1855. He entered the army in 1798. In 1806 he was appointed quartermaster-general in South America. After the storming of Montevideo and the expedition against Buenos Ayres, he took part in the peninsular war. From 1825 to 1829 he officiated as governor of the eastern district of the Cape of Good Hope, and was subsequently appointed governor-in-chief of New South Wales and Van Diemen's Land. In commemoration of his able administration, his name was given to an Australian county, and his statue erected at Sydney.

BOURMONT, LOUIS AUGUSTE VICTOR DE GHAISNE, count, marshal of France, born in Anjou, Sept. 2, 1773, died Oct. 27, 1846. At the age of 15 he entered the royal French guards, to which nobles alone were eligible. In 1790 he emigrated from France, and afterward served the royal cause in La Vendée, Bretagne, and Maine, becoming major-general at the age of 20. Immediately after he was thus promoted, he was sent to England for the purpose of inducing the British government actively to aid the Bourbon cause, but failed. He subsequently commanded a division of the Chouans, in the renewed Vendean revolt, but, at the period of the 18th Brumaire, offered his services to Napoleon, who accepted them. Some distrust existed, however, and he was arrested on suspicion of being concerned in the plot of the infernal machine. After having been successively imprisoned in Paris, Dijon, and Besançon, he escaped with his family to Portugal, where he remained 5 years. In 1810 he was allowed to return to France, and appeared to devote himself zealously to Napo-

leon's interests. After Napoleon's departure for Elba, he entered the service of Louis XVIII., to whom he offered his sword, on the eve of his flight from Paris. On Napoleon's return, he again entered the imperial service, and was intrusted with the command of a brigade of the grand army, but on the eve of the battle of Waterloo, he abandoned his colors, leaving Gen. Hulst as his successor, and went over to Louis XVIII. at Ghent. Ten days after that battle, he entered France with the title of commander of the northern frontier. Alison says, that "the envenomed testimony which he bore against Marshal Ney had gone far to seal the fate of that unfortunate man." On Ney's death, Bourmont was appointed to the command of one of the divisions of the royal guard. He served under the duke of Angoulême in the Spanish campaign of 1823; became minister of war, under Prince Polignac, in 1829; and was commander of the military expedition to Algiers, in 1830, after which he was created a marshal of France. After the revolution of July, he was superseded at Algiers, treated with marked discourtesy on his return, proscribed, and exiled. He accompanied the duchess de Berry to La Vendée, and afterward devoted his service to the cause of Don Miguel in Portugal, and of Don Carlos in Spain; resided successively in England, Holland, and Germany; was allowed to return to France in 1840, but was mobbed by the populace of Marseilles. He spent the last 6 years of his life in retirement.

BOURNE, a market town and parish of Lincolnshire, England. Pop. 3,500. A canal connects the town with Boston. In Saxon times it had a castle, which was the seat of a lordship of some note. A tessellated pavement and some Roman coins have been dug up in the neighborhood.

BOURNE, HUGH, the founder of the sect of Primitive Methodists in England, born April 8, 1771, died Oct. 11, 1852. About 1810, some of the Wesleyan Methodists were desirous of renewing the primitive form of worship and constitution, and wished particularly to revive camp meetings. These practices were considered inadvisable, and accordingly Mr. Bourne and his friends were expelled from the body. They were 20 in number, and Hugh Bourne was acknowledged their elder. The sect is now a powerful body in England, numbering 109,000 members, with an annual accession of 4,000 or 5,000. They have 600 regular preachers, and 10,000 lay preachers. In 1844, Mr. Bourne visited the United States, where his preaching excited much attention. He was always a total abstinent from intoxicating liquors.

BOURNE, VINCENT, an English scholar, born about 1700, died Dec. 2, 1747, achieved some reputation, principally as a Latinist and composer of Latin elegiac verses. He was educated at Westminster, and at Trinity college, Cambridge; whence he returned to Westminster as a fellow, and served there many years as an

undermaster. His principal writings, which were published under the title of *Poemata* in 1734, consist of Latin versions of the beautiful old ballad of "William and Margaret," of "Colin's Complaint," and of "Lucy and Colin," by Tickell, as also of the far more celebrated song, a favorite to the present day, of "Black-eyed Susan." Cowper made English translations of several of Bourne's original Latin pieces.

BOURQUENEY, FRANÇOIS ADOLPHE, baron de, a French diplomatist, born in 1810. He first served under the auspices of Chateaubriand, who took him as his third secretary when sent ambassador to Rome. After acting as secretary to various embassies, he was chosen by Guizot to represent France at Constantinople, where he resided until the revolution of 1848. He was again employed by Napoleon III. as ambassador at Vienna, where he conducted the negotiations connected with the Russo-Turkish war. He has since remained as the French ambassador at that court.

BOURRIENNE, LOUIS ANTOINE FAUVELET DE, private secretary of Napoleon, born at Sens, July 9, 1769, died near Caen, Feb. 7, 1834. He entered the military school of Brienne in 1778, and was there some 6 years as Napoleon's school-fellow. From 1789 to 1792, he spent his time as attaché to the French embassy at Vienna, as a student of international law and northern languages at Leipsic, and at the court of Poniatowski, at Warsaw. After his return to Paris, he renewed his intimacy with Napoleon, then a poor and friendless officer; but the decisive turn taken by the revolutionary movement after June 20, 1792, drove him back to Germany. In 1795 he again returned to Paris, and there again met Napoleon, who however treated him coldly; but toward the end of 1796, he applied again to him, and was summoned to headquarters, and installed at once as his private secretary. After the second Italian campaign, Bourrienne received the title of councillor of state, was lodged at the Tuilleries, and admitted to the first consul's family circle. In 1802 the house of Coulon, army contractors, whose partner Bourrienne had secretly become, and for which he had procured the lucrative business of supplying the whole cavalry equipment, failed with a deficit of 8 millions; the chief of the house disappeared, and Bourrienne was banished to Hamburg. In 1805 he was appointed to oversee at Hamburg the strict execution of Napoleon's continental system. Accusations of speculation rising against him from the Hamburg senate, from which he had obtained 2,000,000 francs, and from the emperor Alexander, whose relative, the duke of Mecklenburg, he had also mulcted, Napoleon sent a commission to inquire into his conduct, and ordered him to refund 1,000,000 francs to the imperial treasury. Thus, a disgraced and ruined man, he lived at Paris until Napoleon's downfall, in 1814, when he stepped forward, had his million paid back by the French provisional gov-

ernment, was installed its postmaster-general, deposed from this post by Louis XVIII., and at the first rumor of Napoleon's return from Elba, made, by the same prince, prefect of the Paris police, a post he held for 8 days. As Napoleon, in his decree dated Lyons, March 18, had exempted him from the general amnesty, he followed Louis XVIII. to Belgium, was thence despatched to Hamburg, and created, on his return to Paris, state councillor, subsequently minister of state. His pecuniary embarrassments forced him in 1828 to seek a refuge in Belgium, on an estate of the duchess of Brancas at Fontaine l'Evêque, not far from Charleroy. Here, with the assistance of M. de Villemaré and others, he drew up his "Memoirs," (10 vols. 8vo), which appeared in 1829, at Paris, and caused a great deal of excitement. He died in a lunatic hospital.

BOURRIT, MAZO THÉODORE, a Swiss naturalist, born in 1785 at Geneva, died Oct. 7, 1815. He was a painter in enamel; but from love of Alpine scenery, he devoted his life to exploring his native mountains, which he illustrated by pen and pencil sketches.

BOURTANGE, a Dutch town and strong fortress in Groningen, district of Winschoten, situated in the midst of an almost impassable swamp of the same name, near the confines of Hanover. It was captured by the Spaniards in 1593, besieged by the troops of the bishop of Münster in 1672, and taken by the French in 1795. Pop. 1,829.

BOUSSA, a city of interior Africa, and capital of a province of the same name, situated on an island in the river Niger, in N. lat. 10° 14' and E. long. 6° 11'. It is built in detached patches, presenting the appearance of several little villages, and the whole is enclosed by a wall. The number of inhabitants is variously estimated at from 12,000 to 18,000. The surrounding country is bold and rocky, with a fertile soil, producing corn, cotton, and yams in abundance. The African wild animals also abound in the vicinity. Boussa is the place where, in 1805, the enterprising English traveller Mungo Park met his death. He was employed by his government to trace the course of the Niger, and was here, for some reason never explained, attacked by the natives, and but one of his party escaped. His papers were lost with him, and are the more to be regretted because he had already passed beyond Timbuctoo, a city which had never before been visited by any European.

BOUSSIÈRES, a village and commune of France, department of and near the river Doubs, 9 miles S. W. of Besançon. Pop. 306. The grotto of Osselle, noted for its fossil bones and caves hung with beautiful stalactites, is in the vicinity.

BOUSSINGAULT, JEAN BAPTISTE JOSEPH DIEUDONNÉ, chemist, born in Paris, Feb. 2, 1802. He was educated at the mining academy at Saint-Etienne, and afterward employed by an English company to direct the working

of some mines in South America. During the revolution and the war of independence, he joined Bolívar, and obtained the rank of colonel in the army. In this capacity he visited different parts of the country, exploring Venezuela, and all the regions between Cartagena and the mouths of the Orinoco, as well as Peru and Ecuador. Being devotedly attached to the pursuits of science, he made numerous observations in meteorology, and collections in botany and mineralogy. He was the friend and correspondent of Alexander von Humboldt, and his observations in America were in some degree analogous to those of the great German traveller. On his return to France, he was appointed professor of chemistry and dean of the faculty of sciences at Lyons. After a time he resigned these functions, to pursue his favorite investigations more at leisure, and with much success. In 1839, being professor of agriculture at the *conservatoire des arts et métiers*, in Paris, he was elected member of the French institute in the section of agriculture, in lieu of M. Husard, deceased, and appointed professor of chemistry at the Sorbonne as second to Dumas, the nominal professor.—Boussingault has written many papers, and a work in 2 vols., on agricultural chemistry (*Économie rurale*, Paris, 1844, 2d edit. 1849; translated into English by Law, London, 1845, and into German by Gräber, Halle, 1844), which is highly valued by men of science, and is said to have given a new direction to agricultural pursuits in France. The appreciation of manures according to the proportions of nitrogen which they contain, is chiefly due to the researches of Boussingault; and in coöperation with Dumas he measured the exact proportions of the constituent elements of atmospheric air. He has made valuable observations on the peculiar properties and uses of different kinds of vegetables in the feeding and the fattening of cattle. He also discovered a very simple method of preparing oxygen by means of baryta. In 1848, Boussingault, being a director and co-proprietor of the mining establishment of Béchelbronn in the Lower Rhine, was elected by that department as its representative in the constituent assembly, in which he voted with the moderate republicans. He was elected by that assembly, member of the council of state, and continued in the "section of legislation" until the *coup d'état* of Dec. 2, 1851.

BOUSTROPHEDON, "turning like oxen when they plough," a term descriptive of the early Greek manner of writing from left to right and from right to left alternately. Solon's laws and the Sigeian inscription were written in this manner.

BOUTELLE, TIMOTHY, an American lawyer, born at Leominster, Mass, Nov. 10, 1777, died at Waterville, Me., Nov. 1855. He graduated at Harvard college in 1800, and settled at Waterville in the practice of the law. He obtained a high reputation among a number of eminent

competitors, was prominent in procuring the separation of Maine from Massachusetts, and subsequently served in both branches of the legislature. He interested himself in the establishment and support of Waterville college, an institution under the charge of the denomination of Baptists, and in other useful projects; and, after his retirement from practice at the bar, in the construction of the Androscoggin and Kennebec railroad, which owed its completion to his energy and financial sagacity.

BOUTERWEK, FRIEDRICH, a German author, born April 15, 1766, near Goslar in Hanover, died in Göttingen, Aug. 9, 1828. He received his first education in the gymnasium of Brunswick, and subsequently attended the university of Göttingen. He began his literary career by writing poems, but soon devoted himself to philosophy and to the history of literature. He was for a time a follower of Kant, and lectured upon his philosophy in 1791. Bouterwek became professor at the university of Göttingen in 1797. He gave most of his life to that institution, and by his literary labors and lectures contributed to the fame which it enjoyed during the first half of the 19th century. Among his many productions, his "History of Modern Poetry and Oratory" (which has been translated into several foreign languages), and his "Aesthetics," are most prominent.

BOUTEVILLE, FRANÇOIS DE MONTMORENCY, sovereign count of Suxe, born in 1600, beheaded June 27, 1627, leaving the reputation of the most celebrated duellist of his time. In his earliest youth he entered the army, and served with distinction against the Huguenots during the reign of Louis XIII. But duels being then considered the highest proofs of personal courage, he plunged headlong into quarrels, was always successful, and his existence became an almost uninterrupted duel. Whenever public report distinguished any one for gallantry, Bouteville at once sought a quarrel with him. For one of his duels, fought in 1624 on Easter day, he, his adversary, and their seconds, were condemned by the parliament of Paris to be hanged. The parties escaped and the scaffold was destroyed by their friends. In 1626 he killed a marquis of Thorigny, then wounded one of his intimate friends who reproached him because he had not chosen him as his second. For these 2 affairs he was obliged to fly to Brussels. The reigning archduchess received him kindly, and interceded for his pardon with Louis XIII. When the king refused to grant it, Bouteville exclaimed: "As the king refuses to pardon me, I shall fight next in Paris." This he did, fighting a duel with Marquis Benvron, a relation and avenger of the slain Thorigny. They fought with short swords and daggers. Unable, from the excellence of their fencing, to touch each other, they threw away their swords, seized each other by the throats, but in the act of striking with their daggers, asked simultaneously for life. They

fled, but the order for their arrest overtook them at Vitry. They were brought back to Paris and condemned to death. Almost all the highest aristocracy, with which both had been in various ways connected, interceded for them, but in vain. Louis XIII., or rather Cardinal Richelieu, was inflexible. They were beheaded, both dying fearlessly. Bouteville left a wife, who 6 months after his death gave birth to a son, afterward celebrated in the wars of Louis XIV. as Marshal de Luxembourg.

BOUTIN, VINCENT YVES, a French officer of engineers, born near Nantes, 1772, died by assassination in Syria in 1818. He served with distinction during the revolutionary and Napoleonic wars. In 1807 he was attached to Sebastiani's embassy at Constantinople. England having declared war against Turkey, Admiral Duckworth forced the Dardanelles, and appeared before Constantinople. Under the direction of Sebastiani, and especially of Boutin, the Turks threw up batteries on the shores, and the English fleet retired. Shortly afterward, Boutin went to visit Algiers, but on his way was made prisoner by an English cruiser, and brought into Malta, whence, however, he soon escaped, and reached the African coast. On his return he was sent by Napoleon to survey secretly Egypt and Syria, and perished there by the hands of robbers. Boutin having had the foresight to leave his drawings with the French consul at Latakia, they were sent to the French government. His plans of the coast of Africa were of great service in the expedition against Algiers, in 1830.

BOUVART, ALEXIS, a Swiss astronomer, born near Mont Blanc, June 27, 1767, died June 7, 1843. He went to Paris in 1785, and being unable, on account of his poverty, while studying mathematics and astronomy, to enter a special school, attended the free lectures at the college of France. In 1793 he was attached to the Parisian observatory, and in 1795 became one of its regular astronomers. In 1804 he became member of the bureau of longitudes, and by the influence of La Place, was admitted as a member of the academy of sciences. He was a collaborator of La Place, in preparing the *Mécanique céleste*. In 1808 he published new tables of Jupiter and Saturn, to which, in 1821, he added those of Uranus, whose perturbations he was the first to point out and explain. Leverrier's discovery of Neptune in 1846 confirmed what Bouvart had laid down as a hypothesis. He died while making astronomical calculations.

BOUVET, JOACHIM, a French missionary, born at Mans, about 1662, died at Pekin, June 28, 1732. Sent by Louis XIV. to China to study the customs and institutions of that country, he was received with favor at the imperial court at Pekin, employed by the emperor in directing various constructions, and allowed to build a church even within the palace. He returned to France in 1697, with permission to take back with him to China as

many missionaries as would undertake the voyage. He presented to Louis XIV. 49 works in the Chinese language, and in 1699 departed again for China with 10 associates, among whom was the learned Parennin. He labored for nearly 50 years with indefatigable ardor to promote the progress of the sciences in that empire. He gave an account of the state of China in several treatises and letters, and made a dictionary of the language.

BOUVIER, JOHN, an American jurist, of French birth, born at Oodognan, in the department of Gard, in 1787, died in Philadelphia, Nov. 18, 1851. He was of a Quaker family, which emigrated to this country and settled in Philadelphia, when he was in his 15th year. He obtained employment for several years in a bookstore, became a citizen of the United States in 1812, published a newspaper for a short time at Brownsville, in the western part of Pennsylvania, studied law, and was admitted to the bar in 1818. During his studies he made a complete analysis of Blackstone's "Commentaries." In 1822 he began the practice of law in Philadelphia, in which city he resided till his death. He published, in 1839, a "Law Dictionary, adapted to the Constitution and Laws of the United States of America, and of the several States of the American Union," the fruit of 10 years' labor. In 1841 he published a new edition of Bacon's "Abridgment of the Law." His greatest work, published 2 months before his death, was the "Institutes of American Law." He was associate judge of the court of criminal sessions in Philadelphia from the year 1838, and was not only learned in the law, but in the literature of several languages.

BOVES, JOSÉ TOMÁS, a military adventurer in Spanish America, died Dec. 5, 1814. He was born in Oastile, and of the lowest extraction. At the age of 30 he was employed as a naval officer to guard the American coasts, but betrayed his trust, and was condemned and imprisoned for bribery and prevarication. After his release, he was for a time a peddler, but found a vocation more agreeable to him when the war of independence broke out in 1810. He joined the royal forces, and became captain of a company in the army of Cagigal, but began to wage war on his own account after the defeat of Cagigal at Maturin. Boves established himself at Calabozo, and with 500 men, many of whom were slaves, defeated Maríño, the dictator of the eastern provinces. His little army was now increased by fugitives from justice, and all the white and colored vagabonds of the vicinity, at the head of whom he began a warfare which recalls the most desolating campaigns of the barbarous ages. He defeated the independents twice, slaughtered all his prisoners, and gained for his army the name of the Infernal Division. He was defeated by Rivas, and a part of his army, being taken captive, were put to death; but he quickly recovered his strength, resumed the

offensive, and in 1814 defeated Bolívar and Maríño at La Puerta. The struggle was prolonged with alternate successes and reverses, and with incessant cruelties. Boves advanced toward Valencia, where the independents were strongly fortified, and after a blockade, forced the town to capitulate. To give a more solemn sanction to the terms of capitulation, a mass was celebrated between the two armies, and at the moment of the elevation, the royalist general promised a strict and faithful observance of the treaty; but having entered the town, he ordered the republican officers and a large number of the soldiers to be shot. Boves was again victorious at Angaita, and obliged Bolívar to retreat to Carthagena. He now entered Caracas, and shortly after gained a new victory, and killed or wounded 1,500 of the independents. His last triumph was at Urica; he was struck by a lance, and died upon the field of battle. His funeral was celebrated amid bloody commotion, while his troops were putting to death the men, women, and children whom they had made prisoners.

BOVINES, a village of Flanders, within a short distance of Lille, celebrated for the memorable victory gained by Philip Augustus of France over Otho IV. of Germany, and his allies, July 27, 1214. Philip of Valois defeated here, in 1340, 10,000 English troops; and, on May 17 and 18, 1794, the French here defeated the Austrians.

BOVINO (anc. *Bovinum* or *Vibinum*), a fortified town of Naples, pop. 5,721, province of Capitanata, near the Cervaro. It is the see of a bishop, has a fine cathedral, 2 parish churches, and several convents, and is memorable for a defeat of the imperialists by the Spaniards in 1784.

BOW, the earliest instrument known, and the most generally diffused, among all savage and barbarous people, for the propulsion of missiles, in the chase or in war. There are 2 forms of the bow, the long-bow and the cross-bow, the former of which is the earlier, the more general, and by far the more celebrated, as being the weapon of the famous English archers of the middle ages, who were popularly said to carry at their belts the lives of four-and-twenty Scots, that being the number of clothyard arrows in their quivers. The long-bow passed out of use as a military weapon with the improvement of firearms; but there were men yet alive in the beginning of this century who remembered that the Highlanders, in the Jacobite rising of 1715, carried bows and arrows; and at the capture of Paris, in 1814, Bashkirs and Circassians, in the service of Russia, were seen in the streets of that city, armed in chain-mail, with bow-cases and quivers. Some of the North American Indians, especially the Comanches and the Apaches, are still very expert with the bow. The cross-bow is yet used in some field sports. See ARCHERY, AGINCOURT, ARBALAST, BALLISTA, CREECY, and CROSS-BOW.—In MUSIC, a short stick of hard,

elastic wood, along which are stretched horse-hairs, the tension of which is regulated by a screw. It is used for playing on instruments of the violin kind, and varies in size, the double-bass and violoncello bow being much stiffer and stronger than that of the violin.

BOW ISLAND, an island in the South Pacific ocean, near the eastern extremity of the Society Isles, in S. lat. $18^{\circ} 6'$ and W. long. $140^{\circ} 51'$. It is a low island, of coral formation, about 80 miles in length and 5 miles in breadth. It derives its name from its shape, which is bow-like, the outer edge only being of land, and encircling a great central lagoon. It was discovered by Bougainville in 1768.

BOWDEN, JOHN, D. D., a clergyman of the Protestant Episcopal church, born in Ireland, in Jan. 1751, died at Ballston Springs, N. Y., July 31, 1817. He came to this country with his father, who was a British officer in the French war, and after studying 2 years in Princeton college, returned to Ireland. He came to America again in 1770, graduated at King's (now Columbia) college in New York, in 1772, and completed the study of divinity in England, where he was ordained in 1774. He soon became assistant minister of Trinity church in New York city, but lived in retirement at Norwalk, Ct., during the revolutionary war, with the exception of the period when the British held New York, during which he resumed his pastorate in that city. The weakness of his voice obliged him to relinquish preaching, and after being for several years principal of the Episcopal academy in Cheshire, Ct., he was elected in 1805 professor of moral philosophy and belles-lettres in Columbia college, in which position he remained till his death. His works, chiefly in defence of the doctrines and discipline of the Episcopal church, are marked by learning and acuteness.

BOWDICH, THOMAS EDWARD, traveller and author, born at Bristol, England, in 1790, died in Africa, Jan. 10, 1824. He was partner with his father as a merchant, but the occupation of trade was uncongenial, and he accepted a writership in the service of the English African company, arriving at Cape Coast Castle (where his uncle was governor) in 1816, and going, in 1817, as second in command of a mission to Ashantee. Of this mission he became the leader, and succeeded in inducing the Ashantee monarch to conclude a treaty, on terms very advantageous to the British. On his return to England, in 1819, he published an account of his mission in a quarto volume, and soon after proceeded to Paris, with the view of preparing himself for a second African expedition. Mathematical and physical science, and various branches of natural history, were what he required to know, and, assisted by Cuvier and other eminent Frenchmen, he devoted himself, for nearly 4 years, to their study. In that time, he published several works on African travel and geography. He reached the mouth of the Gambia, to commence his second African tour,

but the exposure to heat and cold alternately, while making a trigonometrical survey, resulted in a fever, of which he died.

BOWDITCH, NATHANIEL, an American mathematician, born at Salem, Mass., March 26, 1773, died in Boston, March 16, 1838. The son of a cooper, he was sent to school till 10 years of age, and was then taken into his father's shop to assist by his labor in supporting a large family. He was soon transferred to a ship chandlery, and remained clerk or apprentice in this business till he made his first voyage in 1795. His education and all of his labors in mathematics were accomplished by improving his leisure while pursuing other avocations. For this branch of study he had in his school-days indicated a fondness, and during his apprenticeship, when not engaged in serving customers, he was employed with books, slate, and pencil. Hearing of a mode of working out problems by letters instead of figures, he borrowed an algebra, which at once so interested and agitated him, that he passed a sleepless night. A retired British sailor taught him the elements of navigation. He began to learn Latin in 1790 without an instructor, that he might read the *Principia* of Newton, and by dint of perseverance, with the aid of the equations and diagrams, mastered the reasoning of the author. He afterward learned French for the purpose of having access to the treasures of mathematical science in that language, and shocked his French teacher by declining for some time to learn the pronunciation. Diligent in reading, and having no guide in the selection of books, he read through the whole of Chambers's "Cyclopædia," without omitting an article; and he transcribed all the mathematical papers in the "Transactions" of the royal society of London. He made himself conversant with subjects the most foreign to his favorite studies, acquired in later life a knowledge of Spanish, Italian, and German, in order to indulge his taste for general literature, and was from early youth an ardent admirer of Shakespeare, and remarkably familiar with the Old and New Testaments. Once, while deeply engaged in solving a problem, he forgot a matter of business, and from that day made it an invariable rule never to allow his studies to interfere with any other duties. He formed the most methodical habits, and rose each day at the earliest dawn. Between 1795 and 1808 he made 5 long voyages, successively as clerk, supercargo, and master, visiting the East Indies, Portugal, and several of the ports of the Mediterranean. During the long intervals of leisure which a sailor's life afforded, he pursued his favorite researches with unremitting industry. In his 8d voyage the vessel was chased by a French privateer, and resistance being determined on, the duty assigned to him was that of handing the powder upon deck. In the midst of the preparations, he was seen quietly seated by his keg of powder, occupied as usual with his slate and pencil. When he became master,

he inspired his men with so much of his own enthusiasm, that even the cook of the ship could work a lunar observation. On his return from his last voyage, he arrived off the coast of Salem by night in a violent snow-storm, and with no other guide than his reckoning, confirmed by a single glimpse of the light on Baker's island, found his way safely into the harbor. In 1802 he published his "New American Practical Navigator," which passed through many editions, was esteemed the best work of the sort ever published, and went in American and British craft over every sea of the globe. During the same year, while his ship was lying wind-bound at Boston, he went to attend the performances at Cambridge at the annual commencement of the college, and heard with surprise his own name announced among those on whom had been conferred the degree of master of arts. He always spoke of this day as one of the proudest of his life, and none of the subsequent distinctions which he received from learned and scientific bodies, at home and abroad, afforded him so much pleasure as this degree from Harvard. On the close of his seafaring life, he was elected president of the Essex fire and marine insurance company, which situation he held till his removal to Boston in 1823. His attachment to his native place made him decline the professorship of mathematics in Harvard university, to which he was elected in 1808, and the corresponding professorship in the university of Virginia, which President Jefferson desired him to accept in 1818, and in the military academy at West Point, to which Mr. Calhoun, the secretary of war, wished to recommend his nomination by the president in 1820. Among his occasional labors at Salem, were a chart of remarkable beauty and exactness, of the harbors of Salem, Marblehead, Beverly, and Manchester; 23 contributions, chiefly on astronomical subjects, to the "Transactions" of the American academy of arts and sciences; the article on modern astronomy in Vol. XX. of the North American Review; and many articles in the American edition of Rees's Cyclopædia. He completed, between 1814 and 1817, the gigantic undertaking on which his fame as a man of science chiefly rests, a "Translation" of the *Mécanique céleste* of La Place, accompanied by an elaborate commentary. It was estimated that there were at that time but 2, or perhaps 3 persons in America, and not more than 12 in Great Britain, who were able to read the original work critically. The French astronomer, thoroughly master of the mighty subject, very often omitted intermediate steps in his demonstrations, and grasped the conclusion without showing the process. It was the design of the translator to supply these deficiencies, and almost uniformly, when La Place writes, "Thus it plainly appears," he was obliged to substitute an elaborate paragraph showing how it plainly appears. Another object was to record subsequent discoveries, to continue the original work

to the latest date, and to subjoin parallel passages from geometers who had treated of the same subjects. A third object was to show the sources from which La Place had derived assistance, to give credit to the eminent mathematicians, both of ancient and modern times, by whom his labors had been rendered easier or more effective. His work, concise in all its processes and expressions, told the great truths of science, but had little that was historical in it, and did not tell by whom those truths had been first discovered and announced. The elucidations and commentaries formed more than half the work, as produced by Dr. Bowditch. The estimated cost of publication exceeded \$12,000, and he was therefore obliged to defer it, and the first volume did not appear till 1829. In 1823, the Massachusetts hospital life insurance company was established in Boston, and Dr. Bowditch, being invited to take charge of its affairs with the title of actuary, and with a liberal compensation, removed with his family to Boston. He thus obtained the means for prosecuting the great undertaking of his life. Three of the volumes were published before his death; he revised, during his last illness, nearly all the proof sheets of the 4th, which appeared soon after his death; and the 5th volume, which La Place had added to his work many years after the other, was subsequently issued under the editorial care of Prof. B. Peirce. Dr. Bowditch's peculiar methodical habits of business were of the greatest service to the insurance company for which he acted, which under his direction, and by the consent of the legislature, became a large moneyed institution, holding in trust and lending the property of individuals. He was during the latter years of his life a trustee of the Boston Athenæum, president of the American academy of arts and sciences, and a member of the corporation of Harvard college. From Harvard college he received the degree of doctor of laws, in 1816, and he was at his death a member of the royal societies of Edinburgh and London, of the royal academies of Palermo and Berlin, the royal Irish society, the royal astronomical society of London, and the British association. He twice held a seat in the executive council of Massachusetts, but during the last 20 years of his life retired altogether from the exciting scenes of political life to what he called his "peaceful mathematics." He was twice married, his first wife surviving her marriage but a few months. From his second wife he received constant encouragement in his labors, and it was her urgent solicitation which made him incur the expense of publication. The tomb of Dr. Bowditch, surmounted by his statue in sitting posture, is a prominent object of interest in Mount Auburn cemetery. His library, composed chiefly of works of a scientific character, is now preserved in Boston, and is free to persons of that vicinity known to the proprietors, or conforming to the rules. (See "Memoir of Nathaniel

Bowditch," by his son, N. I. Bowditch. Boston, 1839.)

BOWDITCH ISLAND, a coral island of triangular form, in the South Pacific. It was discovered by Commander Wilkes, of the United States navy, Jan. 29, 1841. Length, 8 miles; breadth, about 4.

BOWDLER, THOMAS, English author, born in 1754, died in 1825. He was a physician, and wrote "Letters from Holland," but is best known as having published a curious expurgated "Family Shakespeare."

BOWDOIN, JAMES, governor of Massachusetts, born in Boston, Aug. 3, 1727, died Nov. 6, 1790. He was descended from a family of Huguenot refugees, graduated at Harvard college in 1745, and entered public life in 1753, as representative in the general court. He was subsequently senator and councillor. Throughout the troubles which preceded the revolution, he was forward in opposition to the royal governor, by whom his influence was denounced as formidable. In 1775 he was president of the council of government; when the convention assembled in 1778, for the formation of a constitution, he was chosen president; and in 1785 and '86 succeeded Hancock as governor. It was during his administration that the disturbances and armed rebellions in the western counties of Massachusetts, known as Shays's war, occurred. The country was in great distress, and the aspect of affairs dangerous; but he called out 4,000 militia, under Gen. Lincoln, the funds for whose maintenance were raised by subscription in Boston, and the speedy suppression of the insurrection was due to his vigorous and decided course; yet he lost his election the next year. He was afterward a member of the convention called to accept the federal constitution.

BOWDOIN, JAMES, patron of Bowdoin college, and son of the preceding, born Sept. 22, 1752, died Oct. 11, 1811. He graduated at Harvard college in 1771, afterward spent one year at Oxford, and commenced his travels on the continent, but was recalled by the news of the battle of Lexington. Upon his return, devoting himself principally to literary pursuits, he was successively representative, senator, and councillor. In May, 1805, he went to Spain with a commission from Mr. Jefferson, to procure a settlement of the Louisiana bond-claims, the cession of Florida, and compensation for injuries to American commerce. He remained abroad until 1808, but without accomplishing the object of his mission. He brought home with him from Paris an extensive library, philosophical apparatus, and collection of paintings, all of which he left at his death to Bowdoin college, of which he had been previously a benefactor; together with 6,000 acres of land, and the reversion of the island of Nantuxon, which had been his favorite residence.

BOWDOIN COLLEGE, the oldest and most prominent literary institution in the state of Maine, situated at Brunswick on an elevated

plain south of the village, about 1 mile from the Androscoggin river, and 4 miles from the shore of the Atlantic ocean. It derives its name from James Bowdoin, governor of Massachusetts in 1785, and a descendant of Pierre Baudouin, a French Protestant who fled to America on the revocation of the edict of Nantes. His name was selected as one of the most honored which Massachusetts at that time boasted, and his son became a munificent patron of the college. Prior to the revolution, it had been proposed to establish a college in Maine, then a district of Massachusetts, but by reason of the tumults of the time, it was not till 1788 that a petition for a charter was presented to the Massachusetts legislature, from the association of ministers and the court of sessions for Cumberland county. The charter was granted in 1794, together with 5 townships, as a foundation for the college, whose object, as stated in the act of incorporation, should be to "promote virtue and piety, and the knowledge of the languages and of the useful and liberal arts and sciences." The government was vested in 2 boards, one of trustees, and the other of overseers, which met in 1801, and elected Joseph McKeen, D. D., a graduate of Dartmouth, for president of the college, and John Abbot, a graduate of Harvard, for professor of languages. These officers were installed in 1802, when 8 students were admitted, and in 1806 the first honors bestowed by the new institution were conferred upon 8 graduates. A single building at this time served all the college uses, and also as the residence of the family of the president. President McKeen, dying in 1807, was succeeded by Jesse Appleton, D. D., who a few years before had been one of the 2 prominent candidates for the chair of theology in Harvard university, and who, during the 12 years of his presidency, contributed largely to the prosperity of the college by his ability and efficiency as an officer, and his amiable personal character. James Bowdoin, son of the governor, had before made a donation to the college of 1,000 acres of land, and more than £1,100; and at his death in 1811, he left to it, beside another donation of land, a magnificent bequest of 400 models in crystallography, more than 500 specimens of minerals, which had been arranged by Haüy, an elegant private library, and a costly collection of paintings which he had purchased in Europe. This gallery of paintings, since then much increased, is one of rare excellence, and the crystals and minerals were the nucleus to the large and valuable mineralogical and conchological cabinets which have been collected and arranged by Prof. Cleaveland. Upon the death of President Appleton in 1819, the Rev. William Allen, who had formerly been president of Dartmouth university, was elected his successor, and retained the office till 1839, with the exception of a short interval in 1831, when, being indirectly removed by an act of the legislature of Maine, which had now become a

separate state, he contended against the authority of the state thus to control the college, and the question was decided in his favor by adjudication in the circuit court of the United States. The medical school of Maine was connected with this college in 1821, and has now a very complete anatomical cabinet and chemical apparatus, and a library of 8,550 volumes, principally modern works, which have been selected with much care. President Allen, resigning his office in 1839, was succeeded by the present incumbent, Leonard Woods, D. D. There are now 5 college buildings, all large brick structures, excepting the chapel, which is of light granite, and one of the finest specimens of church architecture in the country. It is in the Romanesque style, was begun in 1846, and completed in 1855, and has rooms also for the library and picture gallery. The library of the college, together with those belonging to the societies of the students, numbers over 80,000 volumes. Bowdoin college has now, beside the president, 14 professors and 2 tutors. Parker Cleaveland, one of the earliest eminent mineralogists in America, has been connected with it since 1805, and has instructed every class that has graduated. Thomas C. Upham, D. D., the author of an elaborate treatise on mental philosophy, better known for several works of a mingled philosophical and devotional character, has held the position of professor of mental philosophy and ethics since 1824. Nathaniel Hawthorne and Henry W. Longfellow graduated here in 1825, and among their contemporaries as students in the college, were J. S. O. Abbott, Luther V. Bell, G. B. Cheever, Jonathan Cilley, William P. Fessenden, John P. Hale, Franklin Pierce, S. S. Prentiss, and Calvin E. Stowe. Longfellow was the professor of modern languages from 1829 to 1835, when he was called to a similar post at Harvard. The whole number of the alumni is 1,260. The present number of students is 203 in the college department, and 50 in the medical. It is an indication of the prosperity of the college, that at the last commencement, a larger class graduated, and also a larger class was admitted, than ever before.

BOWDOINHAM, a post township of Sagadahock co., Me., 25 miles S. W. of Augusta, and 35 N. N. E. of Portland. It lies on the Kennebec river at its junction with a small stream called the Cathans river, which is navigable for ships of 1,000 tons, and on the Kennebec and Portland railroad. It contains 8 churches and 10 stores, and is known for its ship-building. Pop. 2,382.

BOWEN, FRANCIS, an American author, born at Charlestown, Mass., in 1811, was graduated at Harvard university with the highest honors in 1833. In 1835 he was appointed instructor in the university in intellectual philosophy and political economy. He held this position until 1839, when he embarked for Europe, for purposes of travel and study. During his residence

at Paris, he made the acquaintance of Sismondi, De Gerando, and other eminent scholars. Returning from Europe, he established himself in Cambridge in 1841, occupying himself with literary and philosophical pursuits. In 1842 he published an edition of "Virgil, with English notes," and a volume of "Critical Essays on the History and Present Condition of Speculative Philosophy." At the beginning of 1843, he succeeded Dr. John G. Palfrey as editor and proprietor of the "North American Review," which he conducted for 11 years, until January, 1854. Beside writing about one-fourth part of the articles in this work during this period, he prepared and delivered in the winters of 1848-'49, 2 courses of Lowell lectures, on the application of metaphysical and ethical science to the evidences of religion, the substance of which was published in 1849, in an octavo volume, and a second edition, revised and enlarged, in 1855. In 1850, Mr. Bowen was appointed by the corporation of Harvard university, McLean professor of history, but on account of certain unpopular opinions which he had published on politics and on the Hungarian war of 1848-'49, the appointment was not confirmed by the overseers. In the winter of this year Mr. Bowen delivered a course of lectures before the Lowell institute on political economy, and another in 1852 on the origin and development of the English and American constitution. In 1853, when Dr. James Walker was made president of the university, Mr. Bowen was appointed his successor in the Alford professorship of natural religion, moral philosophy, and civil polity, and was confirmed by the overseers almost unanimously. In 1854 he published an abridged edition of Dugald Stewart's "Elements of the Philosophy of the Human Mind," with critical and explanatory notes; and in the same year compiled and edited, with notes, "Documents of the Constitution of England and America, from Magna Charta to the Federal Constitution of 1789." Beside these various labors, he has written, in Sparks's "Library of American Biography," the lives of Sir William Phipps, of Baron Steuben, of James Otis, and of Gen. Benjamin Lincoln. In philosophy, Prof. Bowen is a follower of the earlier English, rather than of the French or German school. He has written largely in defence of the doctrines of Locke and Berkeley, and in refutation of the systems of Kant, Fichte, and Cousin. He has endeavored especially to connect and develop the doctrines of Berkeley and Malebranche, through a theory of causation, which, rejecting physical agencies, maintains volition, whether human or divine, to be the only true or efficient cause, and refers all the phenomena of the outward universe to the immediate or direct action of the Deity. He has consequently been led to controvert very earnestly the positive philosophy of M. Comte and his distinguished English disciple, J. S. Mill. Mr. Mill has replied in the third edition of his "Logic,"

where he has examined in detail the doctrines of his American critic. In political economy, Mr. Bowen adopts in the main the views of Tooke and Fullarton upon the currency, in opposition to those of the bullionists; but he has taken strong grounds against the doctrines of Adam Smith upon free trade, of Malthus upon population, and Ricardo upon rent. He argues that these theories originated in the peculiar condition of English society, and the political institutions of England, so that they are inapplicable to the circumstances of other countries, and directly conflict with the results of experience in the United States. In dealing with this class of subjects, Prof. Bowen has aimed especially to trace out the economical and social results of republican as contrasted with aristocratic forms of government and society, and to find in our peculiar American polity the explanation of many phenomena, hitherto attributed to physical conditions. Since the commencement of the year 1858, Prof. Bowen has delivered a course of lectures before the Lowell institute on the English metaphysicians and philosophers from Bacon to Sir William Hamilton.

BOWEN, PARDON, a physician of Providence, R. I., born in 1757, died in 1826. He graduated at Brown university in 1775, and was surgeon on board a privateer in 1779. He was taken prisoner several times and carried into Halifax, but gave up the sea for the shore in 1782. He became eminent both in medicine and surgery, and during the prevalence of the yellow fever continued at his post, and was more than once attacked by that disease. He published an account of the course of the yellow fever at Providence in 1805, in Hosack's "Medical Register," vol. iv.

BOWEN, WILLIAM O., professor of chemistry in Brown university, born in 1786, died in 1815. He studied medicine, visited Edinburgh and Paris, and received private instruction from Sir Astley Cooper. He lost his life through experiments on chlorine, in attempting to discover the composition of the bleaching liquor employed in England. His labors led to the erection of the important bleaching establishments in Rhode Island.

BOWIE, a northeastern county of Texas, bounded on the N. by Red river, S. by Sulphur fork of the same stream, and comprising an area of about 960 square miles. It borders on Arkansas on the N. E. and E. The surface is undulating, and in many places covered with thick forests of post oak and other timber. Red river is navigable by steamboats along the northern boundary, and the line of the projected Memphis, El Paso, and Pacific railroad intersects the country. The soil of the bottoms is rich red land, well suited to cotton; in other localities it is sandy. Fruits of various kinds, but particularly apples, are cultivated with success. The staple productions are live stock, grain, hay, and cotton. In 1850, the county yielded 1,118 bales of cot-

ton, 98,110 bushels of Indian corn, and 44,855 of sweet potatoes. In 1857, there were 5,690 head of cattle, valued at \$34,900, and 1,200 of horses, valued at \$77,000. The value of real estate was \$384,400, and the aggregate value of all taxable property, \$387,853. Capital, Boston. Pop. in 1856, 2,995, of whom 1,910 were slaves. Named in honor of James Bowie, who fell at Fort Alamo.

BOWIE KNIFE, an American weapon, similar to the French *couteau de chasse*, except that it has but a single edge. According to a rather doubtful story, it was first used by Col. Bowie, of Texas, who, in a contest with the Mexicans previous to the Texan revolution, had his sword broken off within 18 inches of the hilt. He is said to have subsequently employed the fragment as a knife for hand-to-hand fighting. It was imitated by others, and is now worn by all who have to bear weapons, in the whole south and west of the United States.

BOWLDERS, loose rounded blocks of stone, named by the French *blocs erratiques*, found scattered over the surface in high northern and southern latitudes, extending to within 35°, or thereabouts, of the equator. In the northern hemisphere they are always of the varieties of rock which are found in solid ledges in a northerly direction; and in the southern hemisphere, the ledges are again met with toward the pole. These loose rocks appear in each case to have been transported toward the equator, and to have been subjected to rolling action, which has rounded off their corners, and ground their surfaces. The causes that effected this removal will be treated of in the article DILUVIUM. The size of these transported blocks is often enormous. At Fall River, Massachusetts, on the south side of the bay at the mouth of Taunton river, a boulder of conglomerate rock was uncovered in the gravel resting on granite ledges, which was estimated to weigh 5,400 tons. The ledges of this conglomerate are met with only on the other side of the bay. Along the coast of New England, the bowlders, by their great numbers and size, constitute a marked feature in the landscape. They are sometimes met with perched upon bare ledges of rock, and so nicely balanced that, though of great weight, they may be rocked by the hand. These are called rocking-stones. "Plymouth Rock" is a bowlder of sienitic granite, ledges of which are found in the towns near Boston. The highest mountains are often covered with these bowlders of the drift formation. Upon the bare granite summit of Mt. Katahdin—the highest mountain in Maine—at an elevation of 8,000 feet or more above the surrounding valleys, pieces of limestone containing fossil shells are found, though no ledges resembling them are known except many miles to the northwest, and at a much lower level. The northern and central parts of Europe are equally interesting for the distribution of bowlders. The pedestal of the statue of Peter

the Great at St. Petersburg was hewn out of a granite boulder, that lay on a marshy plain near the city. The mass, weighing about 1,500 tons, was transported on rollers and cannon balls over the frozen plain to the city. Upon the limestone ledges of the Jura mountains are found bowlders of granite, which must have come from the higher Alps, where ledges of similar character are found. Some of these bowlders are of very large dimensions, one in particular, known as the *Pierre à Martin*, according to Mr. Greenough, measuring no less than 10,296 cubic feet, and weighing consequently about 820 tons.

BOWLES, WILLIAM A., an Indian agent and chief, born in Frederick co., Maryland, died in confinement in the Moro castle, Havana, Dec. 23, 1805. When 18 years of age he ran away from home, and joined the British army at Philadelphia. He afterward went among the Creek Indians, married an Indian woman, and was one of the English emissaries to excite them against the Americans. After the war he went to England, and on his return, his influence among the Indians was so hostile to the Spaniards that they offered a price of 6,000 dollars for his capture. He was taken in July, 1792, sent to Madrid, and afterward to Manila. Having obtained leave to visit Europe, he returned among the Creeks, and instigated them to renewed hostilities. He was betrayed again into the hands of the Spaniards in 1804, and perished miserably. His biography was published in London in 1791.

BOWLES, WILLIAM LISLE, an English poet and clergyman, born at King's Sutton, Northamptonshire, Sept. 24, 1762, died at Salisbury, April 7, 1850. He was a person of great attainments, and published sonnets and other poems, which passed through many editions. In 1807 he edited the works of Pope, with a new biography, in which he strongly attacked, not only the poetry, but the personal character of the poet. This involved him in a bitter controversy with Byron.—His sister, **CAROLINE ANNE BOWLES**, born about 1798, married Robert Southey in 1839, and tended the poet's declining years with devoted affection. She has written some charming poems, pervaded by an exquisite devotional and moral feeling.

BOWLING, an athletic game and popular amusement, of various forms, peculiar, generally, to nations of the Anglo-Saxon family. There are many kinds of bowling, of which 3 may be named in particular, 2 being perfect games in themselves; the 8d, which differs in many respects from the others, being an essential part of the game of cricket. Bowling, which, centuries ago, was a favorite amusement of our English ancestors, was played in the open air, on a flat expanse of turf, carefully shaved, watered, rolled, and tended with the most assiduous care, till it was as hard as a wooden table, and as free from any inequalities in the surface which might give an irregular motion to the ball, as elastic and springy as a piece of India rubber,

and so perfectly drained that it was impossible that it should ever become soaked or spongy with wet. In the reigns of Queen Anne and the first three Georges, a bowling green was as natural and necessary an appendage to a gentleman's country seat, as a billiard table at the present day; and it was often combined with the features of the park or pleasure garden in such a manner as to produce the most agreeable and picturesque effects. It was generally a perfectly level lawn, of an oblong or oval form, surrounded by a tall screen of evergreens, mixed for ornament with flowering shrubs, planted around it, with the double object of preventing the turf from being burned and scorched in hot weather, and of guarding the eyes of the players against the rays of the level sun. Not unfrequently they were placed so that access could be had to them by a flight of steps from the glass doors or bay windows of the dining room—bowling being a favorite after-dinner amusement of our burly English and Dutch ancestors, and doubtless a useful one, promotive of digestion after the solid 9 o'clock dinner of beef and pudding, lubricated with heady ale and potent punch. "The first and greatest cunning to be observed in bowling," says an old authority, "is the right choosing of your bowl, which must be suitable to the grounds you design to run on. Thus, for close alleys your best choice is the flat bowl; 2, for open grounds of advantage, the round byassed bowl; 3, for greenswards that are plain and level, the bowl that is as round as a ball. The next thing that requires your care is the choosing out your grounds, and preventing the winding hangings and many turning advantages of the same, whether it be in open wide places, or in close bowling alleys. Lastly, have your judgment about you, to observe the risings, fallings, and advantages of the place where you bowl." The object at which this bowling was made, in this old game, was a small ball called the Jack, laid off at a certain distance; and it was the aim of every player to lay his own bowl, in playing as near as possible to this, and to knock away his adversary's bowl, if it were in winning proximity to it. This game was formerly practised in what still retains the name of the Bowling Green, at the lower extremity of Broadway, New York, on which the substantial men of Gotham used to take their pleasure, in the quiet Indian summer afternoons, as described by Geoffrey Crayon, gentleman, with moderate interludes of pipe and tankard.—The modern game of bowling is practised in saloons, on alleys of beautifully fitted carpenter's, or rather, cabinet-maker's work, from 50 to 65 feet in length, and about 4 in width. The alley has a gutter, as it is termed, on each side, and is very slightly convex in the centre, regularly bevelled to the sides. At the further extremity are set up 10 pins, usually of ash wood, about a foot in height, and 3 or 2½ lbs. in weight, arranged in the form of a pyramid, with the apex toward the

bowler. The apex consists of a single pin, the 2d rank of 2, the 3d of 3, and the 4th of 4, the last occupying the whole width of the alley, and the first standing on the crown of it. All the pins are equidistant from each other. At these the bowler rolls wooden balls, usually of lignum vitae, of various weight, at his own option, from 4, 5, or 6 lbs., down to half a pound in weight, with the object of knocking down as many of the pins as possible at each roll. The pins, when set up, are called a frame; and at each frame the bowler rolls 3 balls, when the number of pins down is counted to him, and the frame is set up again for the next bowler. A game ordinarily consists of 10 frames, or 30 balls. If the bowler takes all the pins with his 1st ball, he counts 10; the frame is again set up for his 2d ball, when, if he again takes all, he counts 10 more, and the frame is again set up for his 3d, when whatever number he scores with the 3 balls counts to him as if all had been made off 1 frame. If he take all the 10 with his 1st 2 balls, he is entitled to a fresh frame for his 3d or last ball. This is technically called getting a spare, or a double spare. In order to save the time of setting up the frames, and to enable the alley owner to make more off his alleys, it is usual, in New York, to play what is called the on and off game. In this game, if a spare or a double spare be got, the 1st ball on the 2d regular frame counts doubly, as, the 2d or spare ball on the 1st frame, and also as the 1st regular ball on the 2d frame; and so on *ad infinitum*.—Bowling, at cricket is an important and essential part of the game, permitting the exercise of much skill and judgment. It is not, however, the sole or principal feature, as is the case in the regular games of bowls.

BOWLING GREEN, the capital of Warren co., Kentucky, a prosperous trading and manufacturing village, situated at the head of navigation on Barren river, the channel of which has been cleared so as to admit the passage of steamboats of 200 tons, at all seasons of the year. The Nashville and Louisville railroad passes through the village, which contains a college, a female seminary, a brick court house, 15 stores, a newspaper office, 4 churches, 1 iron foundry, 1 woollen and 1 candle factory, and a number of mills. The trade is chiefly in pork and tobacco. Pop. in 1853, about 2,500.

BOWRING, SIR JOHN, British governor of Hong Kong, born Oct. 17, 1792, at Larkbear, near Exeter. He early applied himself to acquiring a knowledge of modern languages, and between 1821 and 1824 produced his metrical translations of the popular poetry of Russia, Holland, and Spain. He followed these up, in later years, by translations from the poets of Poland, Servia, Hungary, Portugal, Iceland, and Bohemia. About the year 1822, he made the acquaintance of Jeremy Bentham, and successively became his political pupil, executor, editor, and biographer. In 1825 he was made first editor of the "Westminster Review"

(Bentham's property), and continued in this position for several years, writing largely in support of parliamentary reform and free trade. He travelled in Holland in 1828, and received the honorary degree of LL. D. from the university of Groningen. In 1833 he published "Matins and Vespers," a volume of original poetry, chiefly devotional. His connection with the "Westminster Review" had directed his attention to the economics and literature of trade and commerce, and he was sent to France, in 1834-'5, to inquire into the actual state of the commerce with that country, and his report was laid before parliament, and published. He was also employed to inquire into and report upon the commercial condition of Switzerland, Italy, the Levant, and the various states of the German customs union. He was secretary to the commission for investigating public accounts during Earl Grey's administration. He was a member of parliament from 1835 to 1837, and again from 1841 to 1849. He invariably advocated extreme liberal opinions, and was one of the counsel of the celebrated anti-corn law league. He was appointed British consul at Canton, in Jan. 1849, and superintendent of trade in China. Subsequently he was made acting plenipotentiary. He returned to England, for a short time, in 1853, and published a volume in support of a decimal system of coinage. In Feb. 1854, he was knighted, and appointed governor, commander-in-chief, and vice admiral of Hong Kong, where he still remains employed. In 1856 he was sent on a special commercial mission to the king of Siam, and published a "History of Siam," with an account of his visit to that country, early in 1857. Previous to his departure for China, Sir John Bowring had been chairman of the peace society, and as such, had eloquently advocated the propriety of adjusting national disputes by arbitration. In the autumn of 1856, however, circumstances occurred at Canton which induced him to make his practice, on this point, very different from his precepts.

BOWYER, WILLIAM, an English printer and classical scholar, born Dec. 19, 1699, died Nov. 18, 1777. He published several learned works, but his chief performance was a Greek edition of the New Testament, with critical and emendatory notes. Mr. John Nichols, himself a printer, wrote the life of Bowyer, republished in 1812-'15, with large additions, in nine volumes, under the title of "Nichols's Literary Anecdotes of the Eighteenth Century."

BOX TREE (*buxus*), a shrubby evergreen tree, which affords the valuable hard wood called box, much used for making small boxes and ornaments, both in ancient and modern times. The Romans cultivated the box tree as an ornamental shrub in their gardens, and consecrated it to Ceres. The Greeks called it *ρυφορ*, whence the Latin name; and as the same Greek word signifies goblet or vase, it is probable that they named it from its uses in the manufacture of small cups and ornaments. *B. sempervirens*, the

best known species, is the most northern arborescent plant of the natural order *euphorbiacea*, the other trees of that order being found only in mild or tropical climates. It is a native of most parts of Europe, is common from England to Persia, and attains in favorable localities the height of 15 or 20 feet, but in some rocky regions never rises above 8 feet. It has small oval and opposite leaves, male and female flowers upon the same individual, and a 8 or 4-parted calyx. Among the garden varieties is the dwarf box, much used for the edgings of walks. The wood is of a yellowish color, hard, heavy, durable, close-grained, and susceptible of a high polish. It has a specific gravity of 1.8280. It is prepared for industrial uses by steeping large blocks in water during 24 hours, after which it is boiled in water during a certain length of time, and then allowed to dry slowly immersed in sand or ashes to exclude the air and prevent rapid desiccation. It is much used by the turner, the mathematical instrument maker, and the wood engraver, and for certain uses no other kind of wood can replace it with advantage. It is sent in large quantities from Spain to Paris, and thrives well in some parts of England. Great quantities of a very fine quality are imported from the Levant into the manufacturing countries of Europe. There is another species of this genus, *B. Balearica*, or Majorca box, which is a handsomer plant than the preceding, having wide leaves, but which requires a warmer climate or more careful culture. It will grow, however, in the open air, in the milder exposures of northern latitudes. It abounds on the hills of Majorca at the height of 1,500 feet above the level of the sea, and it is supposed to furnish a part of the Spanish and Turkey box-wood. Box-wood is sometimes used in medicine, as a substitute for guaiacum, and the leaves have been employed as a substitute for Peruvian bark. The leaves have also been used instead of hops in the brewing of beer, but they give an acrid, unpleasant flavor to the liquor, which is not comparable to the pleasant bitter of the hop.

BOXING, the art of defence and attack with the hands alone, without any other weapon. Something analogous to boxing was in practice among the Greeks and Romans, by the former of whom it was called *pygmachy*, or fist fighting, and was one of the games of the *palaestra*. It does not appear, however, to have been employed as a means of every-day attack and defence, for the protection of the person from ruffianly assault, or the repression of violence. It was practised with the aid of heavy gauntlets on the hands, called *cassus*, made of bands of leather covered with false knuckles of brass, and loaded with ponderous leaden knobs, not for the defence of the hands, but as weapons of offence against the heads and bodies of the combatants. The weight of these murderous implements was so great as, in some measure, to defeat the object for which they were intended,

and it is very doubtful whether any ancient athlete could deliver so telling a blow with all this paraphernalia, as can a modern boxer with his naked hand, in the quick, clean, effective way in which he delivers a smashing hit from the shoulder, without throwing himself over his balance or off his guard for a moment. All parrying or stopping, and any thing like feinting, countering, or quick jobbing, was out of the question, on the old plan of the athletic boxing of the circus or *palaestra*, and the contest was mostly reduced to a mere trial, who could stand the most severe slow pounding, and endure the most broken ribs and jaws, after the manner described by Homer in the funeral games in honor of Patroclus, and by Virgil in those celebrated after the death of Pallas. In the middle ages, even in England, where the manly art of self-defence, as it is termed, first took root, boxing, if it can be called boxing, seems to have consisted in standing up to receive a blow on the head from an adversary without attempting to guard it, he being afterward bound to receive a counter stroke of the same kind; he who should bear the most without falling, and fell his enemy the oftenest, being declared the victor. A trial of strength of this kind is described by Sir Walter Scott in *Ivanhoe*, as occurring between Friar Tuck, the jolly clerk of Copmanhurst, and King Richard in the character of *Le noir Fainfant*. From this practice seems to have arisen the phrase, "to bide the buffet." During the reigns of Elizabeth, and James I., and probably until the restoration, boxing seems to have been unknown in England, either as a national sport, or a national mode of defence; and "clubs"—which was the rallying word of the flatcaps, or London 'prentices—not fists, were the weapons of the English artisan, peasant, or mechanic, whose rank did not entitle them to wear swords as an article of distinctive dress, or to use them in the settlement of their disputes. Early in the reigns of the princes of the house of Brunswick, however, we find the prize ring regularly established; a champion of England was named, wearing a belt of honor won by having proved himself the best pugilist in England, and held on the condition of meeting all comers, on penalty of surrendering it, if declining the trial or beaten by the adversary. From that time it became the usual mode of deciding all disputes among the middle and lower classes, who practised and studied the art as assiduously as did gentlemen a few years earlier that of fencing. Nor did gentlemen refuse to practise the same art, as a means of protection against the assaults of inferiors, and still more as the best system of gymnastics for bringing all the limbs under perfect command, rendering every part of the body pliant, flexible, and firm, acquiring a perfect *aplomb*, as it is called, or power of keeping the true centre of gravity in every position, and of extending the body and limbs to the extreme length and recovering again without pause or difficulty. The practice

of boxing also gives to those proficient in it a remarkable power of calmly looking danger in the eye, and preserving both the temper and the courage under trying circumstances unruffled. The prevalence of boxing as a method, half amicably, of deciding quarrels, and of sparing with the gloves as an amusement, led to the establishment of the prize rings, and of public trials of skill, strength, and courage, for prizes or wagers which were formerly encouraged by English gentlemen of the highest character and refinement, patronized by the best citizens, and the utility of which was disputed by no one. The prize ring inculcated certain rules, to transgress which was regarded as infamous; as, to strike below the belt; to strike a man when he was down; to catch hold of the hair; to bite, kick, or inflict any hurt, except with the shut hand; and above all, to take odds against a single man, or to hurt a child or woman. These rules became the rules of the whole English people; and in case of a quarrel occurring, the casual bystanders would form a ring and insist on the rendition of fair play. It is alleged by the defenders of this sport that it encourages individual and, therefore, national courage; that it leads to a general sense and sentiment of fair play and honor; that it discourages and renders infamous the use of the knife and of deadly weapons; and, lastly, that, as quarrels must arise between man and man which cannot be decided by law, and which it would not be desirable so to settle, if they could, the best way of settling them is to fight it out fairly, see who is the better man, and then shake hands, and be better friends than ever. It is also added that malice, rancor, and slanderous gossip were kept down by the resort to the fist duello; and that it was an excellent thing to teach a man that it is not good or safe for him to utter any thing with his tongue, which he is not able and ready to maintain with his hands.

BOYACA, a department and village of New Granada, South America. The department extends from the frontier of Venezuela to the plain of Bogota, and comprises the whole of the eastern Andes, which lie chiefly in its W. part, the E. being occupied by immense plains, watered by tributaries of the Orinoco. The productions are coffee, sugar, tobacco, indigo, and cotton. Capital, Tunja. Area, 92,800 sq. m. Pop. about 520,000.—The village of Boyaca, 5 m. S. of Tunja, is inhabited mostly by Indians, contains extensive lime-kilns, and was the scene of a battle, in 1819, between the Spaniards and Gen. Bolivar, which resulted in the defeat of the former, and the establishment of Colombian independence. A college was established here in 1821.

BOYAR, or **BOIAR**, among the Slavic nations, a free landowner independent of any sovereign. It is synonymous with *cech*, *lech*, or *bojarin*, used by several Slavic tribes, such as the Bohemians and Poles. The word boyar was at first especially used by the Bulgarians, Serbs, and Russians, and then was

adopted by the Moldavians and Wallachians. It represented the highest social condition, corresponding in certain respects to that of an English peer. In ancient Russia the boyars were the next after the princes of the blood, or *knasia*, who were all originally petty sovereigns. The boyars formed a kind of supreme political body in the state, and acted as the council (*duma*) of the grand dukes. All the higher offices, civil and military, including the lieutenancies in the provinces, were held by them. While Russia was still divided into several petty sovereignties, the boyars enjoyed the right of choosing for themselves and for their dependants the prince whom they wished to serve, and to leave the service at their pleasure, without any previous notification. When the grand dukes of Vladimir and of Moscow stripped these petty princes of their sovereign rights, and transformed them from vassals into subjects, the dignity of boyars was granted to their families. The boyars had their own military retinue and their clients; and their influence on the masses of the people often equalled that of the grand dukes. The sovereign ukases always contained the sacramental words, "ordered by the grand duke (subsequently it was "by the czar"), and approved by the boyars." Precedence among the boyars was reckoned according to the date of the title, which was hereditary, and the observance of it was carried so far, that in the 16th and 17th centuries any boyar of an older creation refused to serve under a younger one. This struggle for rank, called in Russia *miastnitshestvo*, was ended by the czar Alexis Michailowitch Romanoff, who destroyed the official records and diplomas of the boyars. Peter the Great wholly abolished their power and official privileges, and the name now remains only as a historical distinction, and a recollection of the past, in families which once possessed the dignity. In Wallachia and Moldavia the boyars still exist; they form the council of the princes or hospodars, and exercise a preponderating influence over the people.

BOYOE, **HECTOR**. See **BOETHIUS**.

BOYOE, **WILLIAM**, an English composer of sacred music, born in London Feb. 7, 1710, died there Feb. 7, 1779; was made doctor of music in 1749, master of the king's band in 1757, and organist of the royal chapel in 1758. He produced numerous compositions which have enriched the church music of England. His best work, "Lord, thou hast been our refuge," was written for the feast of the sons of the clergy, at whose annual celebration in St. Paul's cathedral it has ever since been performed. In 1760 he published 3 volumes of cathedral music of the English masters during the preceding 2 centuries—a collection which had been commenced by Dr. Greene. He excelled also as a dramatic and miscellaneous composer.

BOYD, **HENRY**, an Irish scholar, translator of Dante, born about the middle of the last century, died Sept. 17, 1832. In 1785 he pub-

lished a translation of the *Inferno* of Dante, with a specimen of the *Orlando Furioso*. In 1796 appeared a volume of dramatic and lyric poems, followed, in 1802, by the whole of Dante's *Divina Commedia*, in English verse.

BOYD, JOHN PARKER, brigadier general in the army of the United States, born in Newburyport, Mass., 1768, died in Boston, Oct. 4, 1830. He had passed through a peculiar military career in Hindostan. He raised a force of 8 battalions, each of about 500 men, with cannon, elephants, and a few English officers, whom, as well as his men, he hired at a certain amount per month. The equipment was his sole property, and he let out the services of his little army to any of the Indian princes who would give him the best pay. He was in the pay of Holkar, in the Peishwa's service, and afterward in that of Nizam Ali Khan. Finding the trade in war grow dull, he sold out his stock of arms, elephants, and equipments to Col. Felose, a Neapolitan. He was at Paris in 1808, and having found his way back to America, was put at the head of a detachment of 1,500, men of Williamson's army, in the expedition to Upper Canada, and fought the battle of Williamsburg, Nov. 11, 1813. He was a good officer, and after the war was appointed naval officer of the port of Boston. He published some documents relating to military affairs during the war, in 1816.

BOYD, MARK ALEXANDER, a Scottish scholar and soldier, born at Galloway, Jan. 18, 1562, died at Pinkill, April 10, 1601. His headstrong temper made him quarrel with his relatives and instructors, and before he had finished his academic course, he sought his fortune at court, where one duel and numberless broils soon made him notorious. He went to France, where he studied civil law, and thence (to avoid the plague) to Italy. In 1587, when the war of the league commenced, he joined the Catholic party as a volunteer soldier, though himself a Protestant, but at the close of the campaign, in 1588, resumed his legal studies at Toulouse, where he was imprisoned for his religious opinions. He was permitted to escape to Bordeaux, and for some years his life alternated between war and study. His elder brother's death, in 1595, induced him to return to Scotland; and he had previously endeavored to win the favor of James VI., by dedicating to him a volume of Latin poems, published at Antwerp in 1592. Some other of his Latin poems are to be found in the *Delicia Poetarum Scotorum*; but Lord Hailes pronounced his style to be incorrect, and his ideas frequently impure.

BOYD, ZACHARY, a Scottish divine, born 1594, died at Glasgow, 1653, wrote several books, chiefly polemical, among which is "The Last Battle of the Soul in Death." It is divided into eight conferences which take place between a dying man and his spiritual guide. It also contains the last speech of the former to his wife and children, and concludes with a dispute between the devil and the angel Michael, touching the soul about to be disembodied.

This dispute ends with the defeat of Satan, who retires much discomfited, after very unfairly attempting to give the dying man a "gripe with his rod," which Michael wards off. He also wrote the metrical paraphrase of the Scriptures, popularly called "Zachary Boyd's Bible," bequeathed, with many other manuscripts, and a large sum of money, to the university of Glasgow, in whose library it remains. Parts of this are in doggerel verse; the most familiar language is employed, and in many instances, without the slightest regard to the rules of delicacy.

BOYDELL, JOHN, an English engraver and print-publisher, born at Stanton, in Shropshire, Jan. 19, 1719, died in London, Dec. 12, 1804. He had been educated for the church, but subsequently devoted himself to the fine arts. His first publication was the "Bridge Book," so called because there was a bridge in each of the views which it contained. In 1744 he published, by subscription, a volume of engravings, wholly executed by himself, containing 152 views in England and Wales. The profits of this volume enabled him to become a regular publisher, and to employ good artists. In a few years the engravings of Boydell were largely exported to Holland, Flanders, and Germany. He resolved to establish an English school of historical painting. Purchasing suitable premises in Pall Mall, he erected there his "Shakespeare Gallery," and employed Reynolds, Opie, West, Northcote, and other eminent painters, to fill it. From these pictures the best engravers produced that showy volume (3 feet by 2 in size) in royal elephant folio, entitled "A Collection of Prints from Pictures painted for the purpose of illustrating the Dramatical Works of Shakespeare." It appeared in 1804 (having been preceded, in 1792-1801, by Boydell's edition of Shakespeare, printed by Bulmer, 9 vols. folio), and the sum of £350,000 had been expended upon it. He had every reason to expect, when he commenced this project, that, as with his previous productions, his foreign customers would take a considerable number of copies. But a 12 years' war had stopped his foreign trade, and in 1804, at the age of 85, he was compelled to solicit parliament to authorize him to dispose of the original paintings by lottery. He lived to see the last ticket sold, but the distribution of the pictures did not take place until after his death. Mr. Boydell was alderman of London in 1782, sheriff in 1785, and lord mayor in 1790.

BOYDTOWN, the capital of Mecklenburg co., Virginia, situated about 6 m. from Roanoke river, and 90 m. S. W. of Richmond. It is the seat of Randolph Macon college, an institution under the charge of the Methodists, founded in 1832, and numbering about 80 students.

BOYEN, HERMANN VON, a Prussian statesman, born at Kreuzburg, East Prussia, in 1771, died Feb. 15, 1848. He began his career in 1784, as a simple corporal of infantry. He was

wounded in the battle of Auerstädt, and participated in the wars against Napoleon in 1813-15. As secretary of war, he contributed to the organization of the Prussian militia, but dissenting from the policy of the government, he resigned his post in 1819, and kept aloof from public service until 1840, when Frederic William IV. made him general of infantry, and next year minister of war. On his final resignation, in Oct. 1847, he received the appointment of governor of the Berlin hotel of invalids, and was made general field marshal before his death.

BOYER, ABEL, a lexicographer and writer, of French origin, born at Castres, Languedoc, June 18, 1667, died at Chelsea, London, Nov. 16, 1729. He was a French Protestant refugee, and settled in London in the reign of William III., as a teacher of languages. He acquired considerable facility in writing English, and published several literary and political works. He also wrote a French dictionary and grammar, which has had immense school circulation for more than a century in England, and is even yet very largely used in Ireland. It has been repeatedly revised, corrected, and enlarged, until the difference between its original and the present form is great indeed.

BOYER, ALEXIS, a French surgeon, born at Uzerche, department of Corrèze, March 1, 1757, died in Paris, Nov. 25, 1838. Born in poverty, and without adequate means of education, he gained a knowledge of his art by his unswerving industry and energy, and after struggling bravely with many difficulties, and passing through many subordinate positions, he was appointed professor of operative surgery in Paris, and afterward became chief surgeon of Napoleon, who made him a baron of the empire, with a revenue of 25,000 francs. This, however, he lost after the restoration, but remained in the service of Louis XVIII., of Charles X., and of Louis Philippe. At the death of Deschamps, in 1825, he became his successor as chief surgeon of the *Charité*, and a member of the institute of France. His best works are, *Traité complet d'anatomie* and *Traité des maladies chirurgicales*, of which many editions have appeared in France, and translations in Germany.

BOYER, JEAN PIERRE, a mulatto general and president of Hayti, born in Port-au-Prince, Feb. 3, 1776, died in Paris, July 9, 1850. In 1792, in connection with the free colored population generally, he joined the revolted blacks, then struggling against the French for their independence. When the French gave up Fort St. Nicolas to the English, Boyer fought against them, and distinguished himself in the defence of the fort of Biron, and in other dangerous enterprises. Soon after, Toussaint l'Ouverture, chief of the blacks, separated from the mulattoes, and Boyer, Pétion, and others, retired to France. Bonaparte, then first consul, gave a commission to Boyer, with the rank of a captain, in the expedition fitted out

against the blacks, in 1802, under Gen. Leclerc. The latter, who were afraid of the double dealing of Napoleon, especially as he had attempted the reestablishment of slavery in Guadeloupe, resisted successfully. After the disastrous termination of this expedition, Boyer left the French service; but until 1806, he kept aloof from the various conflicts in Hayti, and his name first appears in Oct. 1806, in the republican constitution put in force by Pétion in Port-au-Prince. A war resulted between the republicans and Christophe, who held a part of the island with the title of emperor. Hayti was thus divided into 2 antagonistic states. Pétion became the first president of the republican part, and Boyer served under him. As commander of Port-au-Prince, the capital of the republic, he repelled the attacks of Christophe. At the death of Pétion, in 1818, Boyer was elected president, and after the death of Christophe, in 1820, the empire was united to the republic. In 1824 Boyer annexed St. Domingo, or the Spanish part of the island, notwithstanding the opposition of the French government, and thus the whole of Hayti came under a single government. The earlier years of his administration excited hopes of a better future for the colored race in the West Indies, and for the prosperity of the young republic. Soon, however, he committed arbitrary acts, trampling on personal liberty and the rights of representation, condemning to death a black deputy, Darfour, his political opponent, and ordering his execution. After the Bourbons were restored in France, they had attempted, in 1814, to regain their sovereignty over the island; but Pétion had refused all their propositions. In 1825 a French squadron appeared before the harbor of Port-au-Prince, and ordered the government of the republic to put on record an order in council of Charles X., by which certain liberties were conceded to the Haytiens, in consideration of which they were to recognize the sovereignty of France, pay \$80,000,000 indemnity to the white planters who had been deprived of their estates, and exclude every other nation from trading with the island. The nation, enervated by its government, dared not now offer the resistance of a quarter of a century previous; and Boyer himself, submitted to the demand, and ordered its acceptance in a secret session of the senate. He contracted a loan in Paris to pay the first instalment of the indemnity; and when the publication of the facts produced insurrectionary movements in various parts of the island, he quenched them in blood. The legislative assembly, convoked under the pressure of fear, in due time confirmed his action, converting the indemnity into a national debt, and decreeing extraordinary taxes to cover it. Boyer proceeded to issue paper money, and introduce various impositions; but the independence of Hayti was saved by the opposition of England and the United States. These powers declared that they would not recognize Hayti as an independent government if her tar-

iff was to be regulated by commercial treaties with France, or by French decrees. But the national prosperity was destroyed under the financial pressure created by the indemnity to France, of which, however, soon neither interest nor principal could be paid. Disorder, oppression, and misery prevailed everywhere; the government neither asked from the chambers a yearly budget, nor presented to them any account of the public expenditures. Finally, in 1842, an insurrection took place. Boyer was overthrown, and obliged to seek refuge in Jamaica, where he resided until the revolution of Feb. 1848 led him to suppose he might find in France a more congenial abode. He settled in Paris with his family, and lived there secluded from the world until his death.

BOYER, PIERRE DENIS, a French theologian, born Oct. 19, 1766, died in Paris, April 24, 1842. He was ordained priest in 1790, and during the revolution lived in retirement, in the mountains of Rouergue. He returned to Paris in 1800, and became professor of dogmatic theology at St. Sulpice. The members of that seminary were dispersed by the emperor in 1811; but on the restoration of Louis XVIII., in 1814, he resumed his professorship. One of his principal works is directed against the philosophical, theological, and political opinions of Lamennais. The revolution of 1830 sent him again to the mountains, but he returned to Paris after writing a defence of social order against modern carbonarism.

BOYLE, a central county of Kentucky, bounded N. E. by Dick's river, a branch of the Kentucky, and comprising an area of 180 square miles. It has a deep, rich soil, and a finely diversified surface, underlying which are extensive beds of limestone. Seven macadamized roads meet at Danville, the county seat, and a railroad connects it with Lexington. The staples are grain, hemp, hay, and tobacco, and in 1850 the productions amounted to 689,708 bushels of Indian corn, 108,846 of oats, 807 tons of hemp, 1,600 pounds of tobacco, and 29,931 of wool. There were 10 grist mills, 4 tanneries, 16 churches, 1 newspaper office, and 658 pupils attending public schools. Formed in 1841, and named in honor of John Boyle, chief justice of Kentucky. Pop. in 1850, 9,116, of whom 8,424 were slaves.

BOYLE, a town, parish, and barony on the river Boyle in Ireland, 108 miles N. W. of Dublin. The barony is now divided into 2 parts, the more northern bearing the name of Boyle, and the other that of French Park. The parish has a diversified surface dotted with small lakes, and comprises a large extent of improved and well-cultivated land. It contains Lord Lorton's demesne of Rockingham. The town is situated in a picturesque country, 8 miles N. W. of Carrick-on-Shannon, and 1 mile from Lough Key; Pop. in 1851, 8,488. The river Boyle, here crossed by 2 bridges, flows through it, dividing the old from the modern portion. The latter is the more neatly

built, but the former embraces most of the interesting objects of the place, the old manor house of the King family, now converted into a barrack, and the ruins of the Cistercian abbey of Boyle, a noble structure, founded in the 12th century, and reduced to its present state in 1595 by the soldiers of the earl of Tyrone. In the new town is a handsome sessions house, surrounded by a fine area, one side of which is formed by a crescent. The other buildings of note are the bridewell, 2 or 3 schools, a dispensary, a workhouse, a church, and several chapels. There are 4 principal streets, 2 of which are very crooked, and all ill-kept. There are a few unimportant manufactories of coarse frieze and flannel, for domestic consumption only. This town is the head of a poor-law union, and the seat of several courts. The Irish "Annals of Boyle," compiled about 1245, and extending from A. D. 420 up to that period, have been published in Latin and in English.

BOYLE, RICHARD, "the great earl of Cork," born Oct. 3, 1566, at Canterbury, in England, died Sept. 15, 1644. He was born a commoner, and educated for the law, but having lost his parents, his resources were so slender that he became clerk to Sir R. Manwood, chief baron of the court of exchequer. Not seeing here any prospect of advancement, he threw up his situation and went to Ireland, where from very small beginnings he became a person of some note about the court. His marriage to a lady of fortune increased his importance, his wife bequeathing him a landed estate worth about \$2,500 a year. His abilities, and the growth of his possessions, raised him up a host of enemies and detractors; and the rebellion of Munster reduced him to poverty. He returned to England, and visited Ireland again in the suite of the earl of Essex. But his presence renewed the malice of his detractors, who, having brought formal charges against him, he attended before the English privy council, and pleaded his cause with such force before Elizabeth in person, that the queen took him into favor. He was made clerk of the council of Munster, and presently bought considerable estates, which he colonized with Protestant tenants, and managed so well as to call forth a remark from Cromwell, that had there been an earl of Cork in each county, there had been no rebellion. After a series of minor promotions, in 1620 he was created earl of Cork, and in 1631, lord high treasurer of Ireland, which office was made hereditary in his family.—**ROGER**, 5th son of the preceding, born April 26, 1621, died Oct. 16, 1679, known as Lord Broghill during the protectorate, and earl of Orrery in the reign of Charles II. He was won to the cause of the commonwealth in Ireland by Cromwell, at a period when he was known to be engaged in favoring the return of Charles II., and was of material assistance in reducing Ireland to subjection. After the protector's death, he was one of Richard Cromwell's privy council, but

favored the restoration of Charles II., by whom he was created earl of Orrery.—ROBERT, an eminent philosopher, born at Lismore Castle, Ireland, Jan. 25, 1626, died at London, Dec. 30, 1691. He learned to speak Latin and French while yet a child, in the house of his father, the earl of Cork. In 1635 he went to Eton, where his father's friend, Sir Henry Wotton, was provost; in 1638 travelled with a tutor to Geneva. He returned in 1644, enriched with a knowledge of Italian and mathematics. Being left heir to a good estate, he devoted his time to physical inquiries, and was one of the founders of a club which afterward became the royal society. In 1654 he left his manor at Stallbridge, to reside at Oxford, nearer his scientific friends. It was here that he improved the air-pump, made his immortal discoveries in pneumatics, and gave the first hints of a theory of colors. Amid the most multifarious philosophical experiments and publications, which exerted a great and beneficial influence upon science in England and in the world, he also wrote many religious papers, having become, from thorough study of the original Scriptures, an earnest Christian. He instituted an annual course of public lectures, known as "Boyle lectures," upon the evidences of Christianity; bore the expense of translating the New Testament into Malay; rewarded the translator of Grotius's *De Veritate* into Arabic, and bought a whole edition for distribution in the East; contributed largely to the printing of the New Testament in Turkish; and in short, spent about \$5,000 per annum for missionary enterprises of this kind, in addition to the labors of his pen. He was universally loved and respected for the purity, modesty, and energy of his character; an energy the more remarkable from the delicacy of his ordinary state of health.—CHARLES, born at Chelsea, Aug. 1676, died Aug. 28, 1731. He was the 2d son of the second earl of Orrery in Ireland, and was graduated at Christ Church, Oxford. An edition of the epistles of Phalaris, the preface of which contains a disparaging allusion to Richard Bentley, having been published under his name, he became complicated in the famous controversy which arose on the subject of the epistles between the eminent Cambridge scholar, and between Atterbury and other distinguished scholars of Oxford. (See BENTLEY, RICHARD.) In 1700, Mr. Boyle was elected to parliament. In 1708 he succeeded to the title of earl of Orrery. He entered the army, and served as major-general under Marlborough in Flanders, and after the treaty of Utrecht in 1713, was sent as envoy to the states of Brabant and Flanders, and raised to the English peerage with the title of Lord Boyle. Under George I., he was one of the lords of the bedchamber, but in 1722 was confined 6 months in the tower for high treason, as an accomplice in Sayer's plot. In the latter part of his life he amused himself with philosophical subjects. The instrument exhibiting the planetary revolutions was called

after him an orrery by George Graham, the inventor, although it is said by Dr. Johnson "that the whole merit of inventing it belongs to Rowley, a mathematician of Lichfield."—JOHN, only son of the preceding, born Jan. 2, 1707, died Nov. 18, 1762. He succeeded his father in the house of lords in 1731, and constantly opposed the administration of Sir Robert Walpole. But he was fond of retirement and of literary pursuits. He resided some time in Ireland, and was acquainted with Swift, and in 1732 published "Remarks" on his life and writings. He was a voluminous author, edited the dramatic works and state papers of his great-grandfather, Pliny's letters, the "Life of Robert Cary, earl of Monmouth," and wrote in the "World," the "Connoisseur," and the "Gentleman's Magazine."

BOYLSTON, NICHOLAS, an American merchant, and benefactor of Harvard college, born in 1716, died in Boston in 1771. He bequeathed to the university £1,500 to found a professorship of rhetoric and oratory. John Quincy Adams was installed first "Boylston" professor, June 12, 1806.—WARD NICHOLAS, also a benefactor of the same university, and son of the preceding, born 1750, died in 1838. In the year 1800 he gave to the medical school of Harvard college a valuable collection of medical and anatomical books, and made provision for its perpetual increase.

BOYLSTON, ZABDIEL, a physician, and the first who practised inoculation for the small-pox in America, born at Brookline, Mass., 1680, died in Boston, March 1, 1766. In 1721, when the small-pox appeared at Boston, the attention of the faculty was called by Cotton Mather to the practice of inoculation, which had been just introduced into western Europe. With the exception of Dr. Boylston, however, they treated the communication with disdain. He commenced the practice in his own family, and they having been brought safely through the disorder, began to extend it. The opposition was general; it was treated as a crime, as the wilful spreading of a malignant poison, as a blasphemous interference with the dispositions of Providence, and extending that affliction from which all good men were praying to be relieved, because, as it was doubtless a judgment of God on the land for their sins, to endeavor to remove it would only expose the people to still heavier inflictions. The exasperation became so great, that the doctor was in some danger. Six of the ministers came out solemnly in his support, and the practice approved itself. In 1721 and 1722 he inoculated 247 persons; 39 were inoculated by others; of the whole number, only 6 died. During the same period, of 5,759 who had the disease in the natural way, 844, or nearly one-seventh, died.

BOYNE, a river of Ireland, formed by the confluence of several small streams, in the southern part of Meath, whence it has a N. E.

course to the town of Navan, where it is joined by the Blackwater. After this it flows nearly E. to Drogheda on its left bank, and, 4 miles below that city, falls into the Irish sea, about 10 miles S. of Dunany point, the southern headland of Dundalk bay. It is famous for the decisive battle fought July 1, 1690, between William III. of England, at the head of a combined force of English, Dutch, and allied detachments, of almost every Protestant kingdom in Europe, and the ex-monarch James II., with an invading French and Irish refugee army.

BOYSE, Boys, or Bois, JOHN, one of the translators of the English Bible under James I., born at Nettleshead, Suffolk, Jan. 8, 1560, died Jan. 14, 1643. When James I. directed a new translation of the Bible to be made, he was chosen as one of the translators, and not only executed his own task, which was the Apocrypha, but also that of one of the others. He was also one of the 6 who met at stationers' hall, to revise the whole, which task they performed in 9 months, having each from the company of stationers 30 shillings a week. He afterward assisted Sir Henry Savile in publishing the works of St. Chrysostom. Being in great poverty, Andrews, bishop of Ely, made him prebendary of his church in 1615. He left a mass of MSS. at his death, one of which, on the text of the Evangelists and the Acts, was published in 1655.

BOYTAOA, or BUTTAQUA, a Portuguese architect, died about 1528. He built the fortifications of Arzilla and Tangiera, but his chief work was the magnificent convent of Belem.

BOZMAN, JOHN LEEDA, an American historian and jurist, born in Talbot co., Md., Aug. 25, 1757, died there April 28, 1828. He was graduated at the university of Pennsylvania in 1783, studied law in London, and afterward practised that profession in his native state, where for several years he acted as deputy attorney-general. His legal reputation, however, rests upon the various law tracts which he published from time to time, as legal questions arose in the courts. He wrote a "Historical and Philosophical Sketch of the Prime Causes of the Revolutionary War," in which he praised Washington, and condemned Franklin; but it was suppressed. During the administration of Washington and the elder Adams, he wrote much in the journals of the day, and at a later period in Dennie's "Portfolio." In 1822 he published at Washington an essay on the colonization society, in which he discussed the question of the origin of races. His literary reputation chiefly rests on his "History of Maryland, from the earliest settlement in 1638, to the Restoration in 1660," a posthumous work, published in 1886, under the auspices of the general assembly of that state.

BOZRAH, BOSTRA, now BUSRAH, an ancient Syrian city, situated on an oasis of the Arabian desert, and now an Arabian pashalic. It is 76 miles S. E. of the ancient city of Damascus. It is mentioned in Scripture, as a town both of

the Moabites and the Edomites, and as the subject of prophetic denunciation both by Jeremiah and Amos. Bozrah in modern times became the see of an archbishop, and later the chief seat of the Nestorian church. But it is emphatically a ruin; not more than a dozen families inhabit it. "Bozrah shall become a desolation, a reproach, a waste, and a curse."

BOZZARIS, MARCO, son of Christos, son of George, a Suliote, of a chieftain's family, born in 1789, died Aug. 20, 1823. He was early involved in revolutionary movements and projects, and was obliged, at the beginning of the present century, after the fall of Suli, to escape to the Ionian islands, where he united with other exiled Armatolic chieftains, and took part in the fruitless attempt at revolution, set on foot in 1806 by the Russians, then at war with Turkey. When the treaty of Tilsit restored the Ionian islands to the French, and deprived the Greeks of any hopes of immediate deliverance, Marco entered the French service as a sergeant in an Albanian regiment, in which, also, his father and uncle served as majors. In 1813 he became a member of the *Hestaria*, a society formed to promote national regeneration, and embracing the most prominent Greeks. When, in 1820, the Albanian chieftain, Ali Pasha, took arms against the Porte, he invited to his aid the exiled Suliotes, and Bozzaris with 800 followers repaired to Epirus to fight against the Ottomans, having first obtained from Ali, by treaty, the restoration of the mountains of Suli. In 1821 the insurrection against Turkey became general, and Bozzaris fought desperately, though in general unsuccessfully, in combination with the English and Americans who had banded themselves together for the liberation of Greece. The only exception to this general ill-success, was his taking of Remussa, and compelling a Turkish pasha, at the head of 1,800 men, to lay down his arms and surrender at discretion; in compensation of which, in the following year, he lost the flower of the Greeks and Philhellenes in a desperate effort to retake the fortress of Suli, after a day's terrible fighting at Krionero. He was disappointed in expecting the continued alliance of the Albanians, but did not cease offensive preparations till in July, 1822, the fatal battle of Peta destroyed the *élite* of the Greek and Philhellenic soldiers. He then threw himself, with 600 Suliotes, into Missolonghi, in which, by various sorties, stratagems, and negotiations, he maintained himself against repeated attacks till the end of the campaign. On the reorganization of the Greek army, in 1823, when Mavrocordato assumed the supreme command, western Hellas, consisting of Thessaly, Epirus, Acarnania, and Etolia, was assigned to the Suliote Bozzaris; while eastern Hellas, including Doris, Phocis, Locris, Boeotia, and Attica, fell to the lot of the celebrated partisan Odyseus, or Ulysses. At the end of June, in this year, the latter chief severely defeated one of the main bodies of the Turks, under Mahemet Pasha, at Thermopylae;

a few days later he stormed the Turkish camp, between the ancient sites of Thebes and Livadia, and again, on July 17, routed the Ottomans with prodigious slaughter on the plains of Chæroneæ. These events, connected as they were, in the imagination of all men who admired patriotism, and were scholars enough to know any thing of the old Persian wars of Greece, with the glories of that first struggle for the liberty of Europe, as against oriental despotism, raised a flame throughout Christendom. This enthusiasm was still more vehemently excited, when, on Aug. 20, the pasha of Scutari, at the head of 20,000 men, who had taken possession of the heights of Agrafa, and was threatening to pour down his forces upon Ætolia, to make conquest of the long defended Missolonghi, was surprised at midnight in his camp at Karpenisi, under the foot of Mount Tymphrestus, by Marco and Constantine Bozzaris; the former of whom, with a handful of 500 Suliotæ, fought his way to the very tent of the commander-in-chief, and was killed by a random shot, while making the pasha of Delvino his prisoner. The victory, however, was decisive; the Turks lost all their artillery, standards, and baggage, and were followed up, until the rout was complete, by Constantine, while Marco, dying in the moment of a victory, which he believed to be decisive of the liberties of his country, exclaimed, "Could a Suliote leader die a nobler death?"

BRA, a Sardinian province of Alba in the district of Coni, on the Stura, and capital of the commune of the same name, containing a gymnasium, metal founderies, and 8 churches. Pop. 11,500. The environs produce silk of excellent quality. It is connected by railway with Turin and Coni. The town was called Braida in the middle ages, conquered in 1552 by Duke Emanuel Philibert, and in 1628 the fortified castle was converted into a convent for Capuchin friars.

BRABANÇONNE, the national hymn in the Belgian revolution. The words are by the young French actor, Jenneval, who died in 1830 on the battle-field near Berchem, and whose mother received from government an annual allowance of nearly \$500. The music is by the Belgian musician, Van Campenhout, who was promoted to the office of chapel-master, and presented with a gold snuff-box by the king. The verses of the Brabançonne end with the stanza:

*La mitraille a brisé l'orange—
Sur l'arbre de la liberté.*

BRABANÇONS, a class of adventurers and lawless soldiers in the middle ages, ready to fight for pay on either side and in any quarter. They derive their name from Brabant, the chief nursery of these troops, and were particularly notorious in France in the 12th century.

BRABANT, **DUCHY OF**, one of the ancient divisions of the Netherlands, bounded on the N. by Holland and Gelderland, on the E. by the arch-

bishopric of Liège, on the S. by the counties of Namur and Hainault, and on the W. by Flanders and Zealand. The Menapii and Tungri were the aboriginal inhabitants of this country. By the Romans it was made part of the province of Gallia Belgica. The Franks settled in it in the 5th century. In the partition of the Frankish monarchy it formed part of the kingdom of Austrasia, and from 978 to 1005, was joined to the duchy of Lorraine. When Duke Otho of Lorraine died childless in 1005, Godfrey, count of Ardennes, was acknowledged by the emperor Henry II. as duke of Brabant. The crusader, Godfrey of Bouillon, was duke of Brabant until he went to Palestine, when the fief was sequestered by the emperor, and it passed into several hands. In 1349, Duke John III. received from the emperor the golden bull of Brabant, according to which no Brabançon could appeal to a higher court of judgment than that of the duke of Brabant. Duke John's eldest daughter, Joanna, bequeathed the duchy to her nephew, Anthony, 2d son of Philip the Bold, duke of Burgundy (1405). Duke Anthony fell on the French side, at the battle of Agincourt. With Philip, the younger brother of Anthony, the line of the dukes of Brabant terminated (1429). Brabant passed to Philip the Good, duke of Burgundy, and remained an integral part of the duchy of Burgundy until, in 1484, Maximilian, emperor of Germany, married Mary, the heiress of Charles the Bold, of Burgundy. Brabant then passed under the dominion of the house of Austria. The emperor Charles V. left it to his son Philip II. of Spain, to which crown it thenceforward belonged. In the revolt of the Netherlands, Brabant was among the first to join, but was not successful in its efforts. At the peace of Münster (1648), the northern part, or Bois-le-Duc, was abandoned to the United Provinces, and received the name of North Brabant; at the same time the provinces of Antwerp and Mechlin were cut off from the ancient limits of the duchy, and erected into separate territories. The remaining part was called thenceforth South Brabant, and remained as part of the hereditary possessions of the Spanish crown, until the extinction of this line at the commencement of the 18th century, when it reverted to Charles VI., afterward emperor of Germany, and was thenceforward known as part of the Austrian Netherlands. Both Brabants were conquered by the French arms in 1794, and united to France. North Brabant was changed into the French department of Bouches-du-Rhin. South Brabant was formed into the departments of La Dyle and Deux-Néthes. At the Congress of Vienna (1814), both Brabants were taken from France, and given to the king of Holland; but at the revolution of 1830, South Brabant joined the revolt of the provinces which had formerly been the Austrian Netherlands, and it has since formed part of the kingdom of Belgium, while North Brabant remains part of the kingdom of

Holland.—**NORTH**, a province of Holland; area about 2,000 square miles; pop. in 1857, 409,678; divided into 21 cantons, and 3 arrondissements, Bois-le-duc, Breda, and Eindhoven; capital, Bois-le-Duc; number of members of the provincial assembly, 42; of deputies to the national assembly, 7. The principal rivers are the Meuse, the Dommel, and the 2 rivers Aa. There are numerous canals, of which that of Breda is the principal. Agriculture is in an advanced condition, notwithstanding the humidity of the soil. The pasturage is bad along the banks of the Meuse, but better in the interior. Mutton, poultry, bees, game, and fish are abundant. Pine is the principal tree; of minerals the country is entirely destitute. The prosperity of the linen, cotton, cutlery, and porcelain manufactures, and other branches of industry, is great, and the inhabitants, although slow to adopt innovations, are distinguished for their laboriousness and frugality, and the country is free from beggars and paupers. One-half of the population is Protestant, the rest belonging to the Roman and Jewish persuasions.—**SOUTH**, the metropolitan province of Belgium, bounded on the N. by the province of Antwerp, on the E. by Liège and Limburg, on the S. by Hainault and Namur, and on the W. by East Flanders. The population of South Brabant is 328,323, on an area of about 1,269 square miles. The inhabitants are mostly Catholic. A part speak Flemish and others Walloon. The soil is flat, and in some places wooded. It is watered by the Dyle, the Demer, and the Senna. The climate is rather moist, but healthy. The agriculture is of the first quality, the land being cultivated like a garden. The products are rye, wheat, oil-seed, and buckwheat, but little fruit. Cattle are reared, mostly oxen and horses; so are bees. Its manufactures are of woollen and cotton stuffs, linen, Brussels lace, leather, hats, playing cards, tobacco, starch, brandy, paper, and oil. South Brabant is intersected by several railroads and canals.

BRACCIANO, a town of the Papal States, about 25 miles from Rome, on the west shore of the lake of Bracciano; pop. about 2,000. It has iron works; in the vicinity are thermal springs, and a large baronial castle of the 15th century.

BRACCIOLINI, Poggio, one of the early revivers of classical learning in Italy, born Feb. 11, 1380, at Terra Nuova, near Arezzo, died in Florence, Oct. 30, 1459. In 1414 he attended Pope John XXII. as apostolic secretary, at the council of Constance. In 1416 he undertook the laborious task of searching the ancient monasteries for manuscripts, and succeeded in recovering 7 orations of Cicero, and a great number of other classical writings. Having impoverished himself in these researches, he accepted an invitation of Cardinal Beaufort to go to England, but, disappointed in his hopes of preferment, and in the literary atmosphere of the country, he returned to Italy in 1431, and again became apostolic secretary to Martin V. and to several succeeding

popes, having served not less than 8 popes in the same capacity. On the appearance of the plague at Rome in 1450, he withdrew to Florence, where he was chosen chancellor 3 years afterward. His "History of Florence" (translated by his son Jacopo from Latin into Italian) comprises the period from 1350 to 1455. Among his most finished productions is his "Dialogue on Nobility." His writings are on moral, philosophical, and controversial subjects, and comprise many translations, orations, and letters, the latter deriving peculiar interest from their reference to contemporary life. His works have not yet been properly collected, the Basel edition of 1538 being considered imperfect. His biography, written by the Rev. William Shepherd (Liverpool, 1802), was translated into Italian, German, and French.

BRACE, **CHARLES LORING**, an American clergyman and author, born at Litchfield, Conn., in 1826, was graduated at Yale college in 1847, after which he was for a few months engaged as a school teacher. He then entered the theological department of Yale college, from which he subsequently removed to the Union theological seminary of New York, where he completed the usual course of study and preparation for the ministry, and has since been a recognized public preacher. He has never connected himself, however, as a clergyman, with any sect or church, but preaches in whatever pulpit is offered to him, his discourses invariably relating to the practical application of generally received religious opinions. While in the New York theological school, he was in the constant habit of visiting prisons, alms-houses, and hospitals, preaching and otherwise endeavoring to benefit their inmates. In 1850 he made a pedestrian journey in Great Britain and Ireland, also visiting the Rhine, Belgium, and Paris. An account of a part of the journey in England was afterward published by one of his companions, under the title of "Walks and Talks of an American Farmer in England." In the autumn of the same year he went to Hamburg, and examined with great interest and care the reformatory institutions of that city. The winter was studiously spent at the university of Berlin. In the summer of 1851 he proceeded into Hungary, and having visited several persons supposed to sympathize with Kossuth, he was arrested at Grosswardein, and brought to trial before a court-martial as a spy. The trial, though summary in character, was protracted by want of evidence, and an opportunity was afforded, by the discharge of a fellow-prisoner, of clandestinely communicating a knowledge of his situation to the Hon. Charles J. McCurdy, then chargé d'affaires of the United States at Vienna. An order for his immediate conveyance to Vienna was at once despatched, and he soon obtained his liberty. He afterward visited Switzerland, England, and Ireland, giving special attention to schools, prisons, and reformatory institutions. Returning to the United States in 1852, he became interested and asso-

ciated in the benevolent labors of the Rev. Mr. Pease, among the most degraded class of the city of New York. In the spring of 1852 he published "Hungary in 1851," which was soon afterward reprinted in England. While engaged in the benevolent operations started by Mr. Pease, he also took an active part in a kind of Sunday schools, called "Boys' meetings," intended especially for the benefit of vagrant or street-wandering children. His energies at length became almost exclusively devoted to this portion of the community, and by his labors through the public press and lectures in the churches, he was chiefly instrumental in the formation of an association called the children's aid society, for the transferring of destitute and vagrant children found in the streets to well-selected homes in the country. Of this society he is still the secretary and principal agent. The society has also established industrial schools and lodging houses for newsboys and others. It employs at present 15 agents and teachers, at an expense of about \$12,000 a year. In the various schools affiliating with it, more than 1,000 girls are regularly instructed, and several hundred youthful street traders are brought under favorable influences at its lodging and reading-rooms. More than 4,000 children have been, through its agency, furnished with rural homes, and put under training for habits of methodical industry. In 1858, Mr. Brace published "Home Life in Germany." A journey in northern Europe in 1856 furnished the materials for his "Norsefolk" (New York, 1857), a description, with copious statistics and personal adventures, of the religious, social, and political condition of the people of Sweden and Norway.

BRACE, JONATHAN, an American judge, born Nov. 12, 1754, at Harwington, Conn., died at Hartford, Aug. 26, 1837. He graduated at Yale college in 1779; studied law, and established himself in practice in Vermont; after 5 years he removed to Connecticut, and spent there the remainder of his life. He was for a long time judge in the county and the probate courts. He also served as representative both in the state and the national legislature, and was for 9 years mayor of Hartford.

BRACE, JULIA, a blind deaf mute, born at Newington, Conn., in 1806. She lost both sight and hearing at the age of 4 years and 5 months, and soon forgot the few words she had learned to speak. At the age of 18 she entered the American asylum for the deaf and dumb at Hartford, then under the care of the Rev. Dr. Gallaudet, in which institution she has remained (with the exception of one year passed in Boston) until the present time. Never prepossessing in her appearance, and at her admission, in consequence of over-indulgence, selfish, sullen, and exacting, her case was one of great difficulty. The existence of the triple infirmity under which she labored was hardly known at that time, and she was regarded, consequently, as a psychological curi-

osity. As compared with some other blind deaf mutes, whose history has been recorded within a few years past, she does not seem possessed of any extraordinary abilities, and, but for her misfortune, would probably have passed as a very ordinary woman. In all that concerns the outward and physical nature, she manifests much intelligence; she sews very well, threading her needle readily with her fingers and tongue; she makes most of her own dresses, which she is very particular to have in the latest fashion; does a large amount of sewing for others; selects her own clothes in the laundry, and irons them carefully; is very neat and particular in her dress, and exhibits marked habits of order. Her temper has lost much of its asperity during her residence at the asylum, and she is now generally amiable and kind to her associates. She exhibits a marked aversion to gentlemen, and avoids the male pupils and teachers, except 2 or 3 of the older teachers, to whom she has become attached. She possesses great tenacity of memory, and nice powers of discrimination. She distinguishes readily articles belonging to any person, and if left in her care will give them to no one but the owner. She keeps herself apprised of the progress of time, days, weeks, and months, and notes the return of the Sabbath, of which she often avails herself to enjoy some delicacy, which she has reserved during the week. In her intellectual education she has never made much progress. A few facts have been acquired, a few lessons learned, but they were soon forgotten. Nor has her moral development been so satisfactory as would have been desirable. It is doubtful if she possesses any distinct idea of God. She has some notion of a resurrection, but probably a vague one; nor, though the effort has often been made, can her dormant curiosity be roused to inquire for the author of the natural objects of which she has some knowledge. Still, limited as is her knowledge of what seems the alphabet of religion, she is not wanting in manifestations of the moral sense. She seems to have a sense of right and wrong, and while tenacious of her own rights, she will not knowingly invade those of others. She is never guilty of theft, falsehood, or deliberate wickedness, and at the bedside of the sick, few are more gentle and thoughtful than she.

BRACHIOPODA, BRACHIOPODS (Gr. *Brachion*, an arm, *pous*, a foot), one of the classes of mollusca, named by Cuvier from 2 long, ciliated arms, which project from the side of the mouth, and with which they create currents that bring them food. By De Blainville and Owen they were called *palliobranchiata*, from *pallium*, a mantle, and *branchia*, gills, the delicate mantle covering the body constituting the respiratory apparatus of the animals. They are bivalve shell-fish, differing from the conchiferæ in the valves being always unequal; yet they are symmetrical and equal-sided. By the old naturalists they were commonly called

lampades, or "lamp-shells," from the resemblance of their form to that of the antique lamps; the hole for the wick in these being represented in the shell by the curved beak of the ventral valve, through which the organ passes by which the animal attaches itself to any substance. The brachiopoda all belong to salt water. They are found attached to corals, to other shells, and to the under sides of shelving rocks. They are met with in very deep water, being drawn up sometimes from the bottom several hundred feet below the surface. They endure all kinds of climate; and in the duration of genera from the remotest geological periods, no other class exhibits such a stability of character. The earliest forms of animal life were the lingulae of the lowest fossiliferous rocks. The genus has continued through all the long series of formations, during which multitudes of other forms have been introduced and spread through an immense number of species, all of which have long since disappeared, leaving no type of their family in existence; but the ancient family of lingula is still met with in the Pacific; and the terebratula, which was introduced in periods nearly as remote, has its representatives living in many parts of the world. Of the class, about 70 recent species are known; but of the fossil, more than 1,000 extinct species have been described. They constitute a large proportion of the shells found so abundantly throughout the New York system, as the spirifers, productæ, atrypæ, strophomenæ, &c.

BRACHISTOCHRONOUS curve is the title given by John Bernoulli to a curve in which a body would slide in the least possible time from one point to another. It is a cycloid; and the attempt to prove this led Lagrange to invent the calculus of variations.

BRACHMANN, LUISE KAROLINE, a German authoress, whose selected poems were published at Leipsic in 1824, chiefly known by her acquaintance with Novalis and Schiller, born at Rochlitz, Feb. 9, 1777, was of a morbid, sentimental disposition, which caused her to commit suicide at Halle, Sept. 17, 1822.

BRACHYOURA (Gr. *Braxys*, short, and *oura*, a tail), a tribe of crustaceous animals of the order *decapoda*, or *homobranchia*. They are distinguished from the *macroura*, or long-tailed tribe of this order, by the shortness of the caudal extremity and its simple structure with few joints. The crabs belong to this tribe, lobsters and shrimps to the *macroura*.

BRACKEN, a county of Kentucky, bordering on the Ohio river. It is drained by the North fork of Licking river, and has a soil generally fertile and productive. It covers an area of 200 square miles, was organized in 1796, and derives its name from a small creek which rises in it. In 1850, the productions were 870,025 bushels of Indian corn, 52,818 of oats, 2,129,370 pounds of tobacco, and 13,550 of wool. There were 12 corn and flour mills, 10 saw mills, 2 tanneries, 15 churches, and 500

pupils attending public schools. Value of land in 1855, \$1,556,022. Capital, Augusta; pop. 8,903, 840 being slaves.

BRACKENRIDGE, HENRY M., an American jurist and diplomatist, born in Pittsburg, Pa., May 11, 1786. At 7 years of age he was sent alone to St. Genevieve, La., to learn the French language. At 20, being admitted to the bar, he commenced practice in Somerset, Maryland. In 1811 he descended the Mississippi in a keelboat, steam not being then in use, and soon received the appointment of deputy attorney-general for the territory of Orleans, afterward the state of Louisiana. The next year he was made district judge, although only 23 years of age. This obliged him to learn the Spanish law and language. During the war of 1812, he corresponded with the government, giving them some valuable information, and afterward wrote a history of the war, which was translated into French and Italian. He took an active part, in conjunction with Mr. Clay, in behalf of the acknowledgment of the independence of the South American republics. Beside other productions, he wrote a pamphlet under the name of an "American," addressed to Mr. Monroe, then president, which was republished in England and France, and being supposed to express the views of the American government, was replied to by the duke of San Carlos, the Spanish minister. He was named on the commission to the South American republics, which sailed in the frigate Congress, Dec. 1817, and on his return, published his "Voyage to South America," which was said by Humboldt to contain an "extraordinary mass of information." He entered Florida in 1821 with General Jackson, to whom his acquaintance with the French and Spanish languages and usages recommended him, and in May was appointed judge of the western district, in which office he remained for 10 years. Removing in 1832 to Pittsburg, he became an active politician, and in 1840 obtained a seat in Congress, and the year after was named a commissioner under the treaty with Mexico. His political writings have been numerous.

BRACKENRIDGE, HUGH HENRY, father of the preceding, an American author and judge, born near Campbellton, in Scotland, in 1748, died in Philadelphia, in 1816. At 5 years of age he came with his father to this country, fitted himself, with the assistance of a clergyman, for Princeton college, while working upon a farm in the interior of Pennsylvania, and supported himself through his collegiate course by teaching. In conjunction with Philip Freneau, he composed and delivered for a graduating part a poem, in the form of a dialogue, on the "Rising Glory of America." He became tutor in the college, studied divinity, and was a chaplain in the continental army. He soon relinquished the pulpit for the bar, edited for a time the "United States Magazine" at Philadelphia, established himself at Pittsburg in 1781, participated with Gallatin in what was known as the whiskey

insurrection, and was appointed in 1799 one of the judges of the supreme court of the state, which office he held till his death. His "Modern Chivalry, or the Adventures of Captain Farago," is an admirable humorous and political satire, and has been especially popular throughout the West. The first portion was published at Pittsburg in 1796, and was republished in Philadelphia in 1846, with illustrations by Darley. The second portion was published 10 years after the first, and both were issued together in 1819. Brackenridge was a fine classical scholar, eminent for social wit, supported Jefferson, was an enthusiast in the cause of France, and wrote many miscellaneous essays and fugitive verses.

BRACT, in botany, a leaf growing at the base of a flower-branch. It is usually a small and imperfect, often lanceolate, leaf; and sometimes, as in the common dogwood, a number of bracts are crowded together around the base of a corymb or umbel, and form an involucre.

BRACTON, HENRY DE, lord chief justice of England in the time of Henry III., died probably about the year 1278. He was educated and took the degree of doctor of laws at Oxford, and about 1244 was made one of the itinerant judges. Ten years later he became chief justice, and held the office 20 years. He wrote *De Legibus et Consuetudinibus Anglia*, one of the earliest English law books.

BRADDOCK, EDWARD, a British general, born in Perthshire, about 1715, died near Pittsburg, Pa., July 13, 1755. Having served with distinction in Spain, Portugal, and Germany, he was in 1755 sent to take charge of the war against the French in America. He set out soon after his arrival, on an expedition against Fort Duquesne. Although unacquainted with Indian warfare, he disregarded the suggestions of Col. Washington, acting as his side-camp, fell into an ambush of French and Indians near that fort, July 9, 1755, was defeated with great loss, and being mortally wounded, died after a hasty retreat of 40 miles.

BRADFORD, a N. E. county of Pennsylvania, bordering on New York, and comprising an area of 1,170 square miles. The north branch of the Susquehanna, Tioga river, and Towanda, Wyalusing and Sugar creeks, are the principal streams. The surface is uneven and thickly wooded with pine, hemlock, and sugar maple. The soil is good, and in 1850 produced 371,143 bushels of corn, 801,675 of wheat, 510,176 of oats, 322,816 of potatoes (the greatest quantity produced by any county of the state except Philadelphia county), 74,028 tons of hay, 1,590,248 pounds of butter, and 193,891 of maple sugar. There were 53 churches, 8 newspaper offices, and 11,838 pupils attending public schools. Iron, bituminous coal, and sandstone are abundant, but lumber forms the chief article of export. The county was formed in 1810 and called Ontario; in 1812 it received its present name in honor of William Bradford, attorney-general of the United States. Capital, Towanda. Pop. in 1850, 42,881.

BRADFORD, a market town, county of Wilts, England, on the river Avon, 107 miles from London by railroad; pop. in 1851, 4,240. It is pleasantly situated, and is noted for producing broadcloths.

BRADFORD, a market town and parliamentary borough of Yorkshire, England, sending 2 members to parliament. Pop. in 1851, 103,778. It is 219 miles from London by railway. The parish of Bradford is large and very populous, including several other towns. In its vicinity are the celebrated iron works of Low Moor and Bowling, known everywhere for the superior quality of their productions and their ponderous castings. Bradford itself is one of the principal seats of the worsted manufacture, both in yarn and in piece. The town is well built, beautifully situated at the union of 3 extensive valleys, with picturesque scenery in the surrounding country, and has the advantage of many ancient and excellent schools. The Airedale college for the education of Independent ministers is at Undercliffe, near Bradford, and a Wesleyan seminary for ministers' sons at Woodhouse Grove; and about 5 miles from the town is the Moravian settlement of Fulneck.

BRADFORD, ALDEN, an American writer, born at Duxbury, Mass., in 1765, died in Boston, Oct. 26, 1843. He was descended from Gov. Bradford, graduated at Harvard College in 1786, was settled as pastor of a congregational church at Wiscasset, Maine, for 8 years, and afterward engaged in the book trade in Boston, as a partner of the firm of Bradford and Read. Leaving trade for politics, he was secretary of state in Massachusetts from 1812 to 1824. He published a history of Massachusetts from 1764 to 1820, and many fugitive pieces at different times.

BRADFORD, ANDREW, an American printer, son of William Bradford, born in Philadelphia about 1686, died Nov. 23, 1742. He was the only printer in Pennsylvania from 1712 to 1728. He published the first newspaper in Philadelphia, Dec. 22, 1719, called the "American Weekly Mercury." It was by him that Benjamin Franklin was first employed, on his arrival in Philadelphia, in 1723. In 1732 he was postmaster; in 1735 he kept a book store at the sign of the Bible in Second street. In 1738 he removed to No. 8 South Front street, to a house which in 1810 was occupied as a printing house by his descendant, Thomas Bradford, publisher of the "True American."

BRADFORD, JOHN, an English martyr, burnt at Smithfield after a long imprisonment, July 1, 1555. His persecution was owing to his eloquence as a preacher. It is said that he was so impressed by a sermon by Latimer on restitution, that he restored some of the king's goods which he had dishonestly appropriated while at Calais.

BRADFORD, WILLIAM, second governor of Plymouth colony, born in Yorkshire, England, in March, 1589, died May 9, 1657. When only

18 he was one of a company which made an attempt to go over to Holland for the sake of greater religious freedom, but being betrayed, he was thrown into prison. After a second unsuccessful attempt, he at length joined his brethren at Amsterdam. He engaged in the plan of removing to America with the English congregation at Leyden, and sailed in the first ship. Upon the death of Gov. Carver, in 1621, he was elected to supply his place. One of his first acts was to adopt measures to confirm the league with the Indian sachem Massasoit. In the beginning of 1622, when the colony was subjected to a distressing famine, a threatening message was received from the sachem of Narragansett in the form of a bundle of arrows bound with the skin of a serpent. The governor sent back the skin filled with powder and ball. This decisive reply finished the correspondence. The Narragansetts were so terrified, that they returned the skin without even inspecting its contents. In return for his kindness and attentions to Massasoit in a dangerous illness, the sachem disclosed to the colony a dangerous conspiracy among the Indians, and it was suppressed. It appearing that the scarcity of their provisions grew out of their system of community of labor, it was decided in the spring of 1623 that each family should plant for itself, on ground to be assigned to it by lot. The internal government of the colony was founded on a mutual compact. The first legal patent or charter was obtained in the name of John Pierce; but in 1630 a more comprehensive one was issued in the name of William Bradford, his heirs, associates, and assigns. In 1640, the general court requested him to deliver the patent into their hands, and upon his complying, immediately returned it into his custody. He was annually elected governor as long as he lived, excepting five years at different intervals, when he declined an election. Though without a learned education, he wrote a history of Plymouth colony from 1602 to 1647. On the retreat of the British army, in 1775, the MS. was carried away from the library of the old south church in Boston, and after having been lost 80 years, was recovered and printed entire by the Massachusetts historical society in 1856. Gov. Bradford had also a large book of copies of letters relating to the affairs of the colony, which is lost. A fragment of it, however, found in a grocer's shop at Halifax, has also been printed by the same society, accompanied by a descriptive and historical account of New England in verse.

BRADFORD, WILLIAM, the first printer in Pennsylvania, born in Leicester, England, in 1659, died in New York, May 23, 1752. Being a Quaker, he emigrated in 1682 or 1683, and landed where Philadelphia was afterward built, before a house was begun. In 1687 he printed an almanac. The writings of George Keith, which he printed, having caused a quarrel among the Quakers, he was arrested in 1692 and imprisoned for libel. On his trial, when the justice

charged the jury to find only the fact as to the printing, Bradford maintained that they were to find also whether the paper was really seditious, and that "the jury are judges in law as well as the matter of fact." He was not convicted, but having incurred the displeasure of the dominant party in Philadelphia, he removed to New York in 1693. In that year, he printed the laws of the colony. Oct. 16, 1725, he began the first newspaper in New York, called the "New York Gazette." In 1738 he established a paper mill at Elizabethtown, N. J. Being temperate and active, he reached a great age without sickness, and walked about on the very day of his death. For more than 50 years he was printer to the government of New York, and for 30 years the only one in the province.

BRADFORD, WILLIAM, attorney-general of the United States, born in Philadelphia, Sept. 14, 1755, died Aug. 23, 1795. He was graduated at Princeton college in 1772, and commenced the study of the law. In the spring of 1776, upon the breaking out of the war with Great Britain, he joined the militia, in which he attained the rank of lieutenant-colonel. In consequence of ill-health, he was obliged to resign at the end of 2 years, and was admitted to the bar in Philadelphia in 1779. In 1780 he was appointed attorney-general of Pennsylvania. Under the new constitution he was appointed a judge of the supreme court, Aug. 23, 1791. Upon the promotion of Edmund Randolph to the office of secretary of state, he received from Washington the appointment of attorney-general of the United States, Jan. 28, 1794. In early life he wrote some pastoral poems in imitation of Shenstone; but his principal production was an "Inquiry how far the Punishment of Death is necessary in Pennsylvania."

BRADLEY. I. A southern county of Arkansas, containing 958 square miles, and traversed by Saline river. The surface is generally level, and the productions in 1854 amounted to 174,165 bushels of corn, 3,684 of wheat, 21,351 of oats, and 3,350 bales of cotton. Capital, Warren. Pop. in 1854, 5,191, of whom 1,908 were slaves. II. A S. E. county of Tennessee, bordering on Georgia, bounded on the N. E. by the Hiawasee river, and comprising an area of about 400 square miles. The surface is uneven, and in the south mountainous. The soil is productive, and in 1850 yielded 594,686 bushels of corn, 151,419 of oats, 34,662 of wheat, 1,600 bales of cotton, and 81,185 pounds of butter. There were 22 churches and 8,000 pupils attending public schools. Much of the hilly part of the county is covered with extensive forests. Capital, Cleveland. Pop. in 1850, 12,259, of whom 744 were slaves.

BRADLEY, JAMES, an English astronomer, born at Sherborne, Gloucestershire, March, 1693, died at Chatford, July 13, 1762. For a while curate and rector, he cultivated astronomy in spare hours, and gained the friendship of Newton and Halley. In 1791 he was ap-

pointed Savilian professor of astronomy, and in 1727 published his brilliant discovery of the aberration of light. Ten years afterward, he published the equally valuable discovery of the nutation of the earth's axis. In 1742 he succeeded Dr. Halley as astronomer royal, and in 1752 he received a pension in consideration of the "advantages of his astronomical labors to the commerce and navigation of Great Britain." Up to 1760 he continued indefatigable in the duties of the observatory; and it was from these observations that Meyer formed his tables of the moon, and Bessel drew the elements of his *Fundamenta Astronomiæ*.

BRADSHAW, JOHN, president of the court which tried and condemned Charles I., sprung from a good Lancashire family, died Nov. 22, 1659. He was made chief justice of Chester in 1647, promoted to the rank of sergeant in 1648, and on Jan. 10, 1649, the commissioners for trying the king chose him for their president. He performed the duties of that arduous office with great dignity and self-possession, sternly and perhaps unfeelingly, but not insolently nor savagely, and declared, on his death-bed, that if the king were to be tried and condemned again, he would be the first to agree to it. He was rewarded by parliament with the estate of Lord Cottington, the chancellorship of the duchy of Lancaster, and the office of president of the council. He opposed Cromwell's elevation to the supreme power, and on his assumption of the protectorate, he was accordingly deprived of the chief-justiceship of Chester; but after Cromwell's death, he obtained a seat in the council, and was again elected president. Bradshaw left the reputation of a cold, hard, and impassive, but upright, conscientious, and heroic republican. He was splendidly buried in Westminster Abbey, but on the restoration, his remains were torn from the tomb and gibbeted beside those of Cromwell and Ireton.

BRADSHAW, WILLIAM, an eminent English Puritan, born at Market Bosworth, in Leicestershire, in 1571, died in the same county, in 1618. His chief claim to notice as an author rests on a small treatise, entitled "English Puritanism," published in 1605, which is valuable as a record of the opinions of the most rigid Puritans of his time.

BRADSTREET, ANNE, a New England poetess, born in 1612, died Sept. 16, 1672. She was the daughter of Gov. Thomas Dudley, and married Gov. Simon Bradstreet. Her volume of poems was published in London, in 1650. A more complete edition appeared at Boston in 1678, containing, among other additional compositions, her best poem, entitled "Contemplation." A 3d edition was published in 1758. She was the mother of 8 children, to whom she makes the following allusion:

I had eight birds hatch't in the nest;
Four cocks there were, and hens the rest;
I nurs'd them up with pains and care,
For cost nor labor did I spare;
Till at last they felt their wing,
Mounted the trees and learned to sing.

BRADSTREET, JOHN, major-general in America, in the British service, died in New York, Oct. 21, 1774. He was in 1746 lieutenant governor of St. John's, Newfoundland. In 1756, when it was considered highly important to keep open the communication with Fort Oswego, on Lake Ontario, he was placed at the head of 40 companies of boatmen, raised for the purpose of supplying it with stores from Schenectady. On his return, July 3, 1756, with 800 of his force, he was attacked from an ambuscade, on the Onondaga river, but repulsed and routed the enemy with great loss. In 1758 he commanded a force of 8,000 men, in the expedition against Fort Frontenac, which was surrendered Aug. 27, with all its military stores, provisions and merchandise, on the 2d day after he commenced the attack. In 1764 he advanced with a considerable party toward the Indian country, and made a treaty of peace with the various tribes at Presque Isle. He was appointed major-general in 1772.

BRADSTREET, SIMON, governor of Massachusetts, born in Lincolnshire, England, in 1603, died at Salem, Mass., March 27, 1697. Bred in the religious family of the earl of Lincoln, he spent one year at Cambridge, and became steward to the countess of Warwick. Upon his marriage with Anne, daughter of Thomas Dudley, he engaged in the enterprise of founding a colony in Massachusetts—was chosen assistant in March, 1630, and arrived at Salem in the course of the summer. He became secretary, agent, and commissioner of the united colonies, and in 1662 was despatched to congratulate Charles II. on his restoration, and look after their interests. From 1673 to 1679, he was deputy governor; then governor till 1686, when the charter was annulled. When Andros was imprisoned in May, 1689, he was restored to the office, which he held till the arrival of Sir William Phipps, in 1692, with the new charter. Without brilliant talents, his integrity, piety, and moderation obtained him the confidence of the people. He advised the surrender of the charter to Charles II., warily distrusting the ability of the colonists to resist; and still more to his honor, he is remembered for having opposed the delusions of the Salem witchcraft.

BRADSTREET, SIMON, minister at Charlestown, Mass., born in 1669, died Dec. 31, 1741. He was spoken of by Governor Burnet as one of the first literary characters and best preachers whom he had met in America. He was so subject to hypochondria as to be afraid to preach from the pulpit, but spoke from the deacon's seat, without notes, usually upon the vanity of earthly things. He is said to have fallen under suspicion of Arminianism.

BRADWARDIN, THOMAS, surnamed the profound doctor, archbishop of Canterbury, born in Chichester in 1290, died in 1348. He was successively professor of theology, chancellor of the cathedral of London, confessor to Edward III., and finally, in 1348, archbishop of

Canterbury. He died at Lambeth, 40 days afterward, without having been able to take possession of his see.

BRADY, HUGH, an American general, born in Northumberland co., Penn., in 1768, died at Detroit, April 15, 1851. He entered the U. S. army as an ensign, March 7, 1792; served with Wayne in his western expedition, after the defeat of St. Clair; was made lieutenant, Feb. 1794, and captain, Jan. 8, 1799. Having afterward left the military service, he was restored to it in 1808, by President Jefferson, who then began to reform the army. June 6, 1812, he was appointed colonel of the 22d foot, and led his troops in the hard-fought battle of Chippewa. They were almost annihilated, but displayed the greatest courage, Gen. Scott saying in his report, "Old Brady showed himself in a sheet of fire." He displayed equal courage at the battle of Niagara Falls, where he was wounded. He was retained in service, on the reduction of the army, as colonel of the 2d foot, a commission he held until his death. After 1835 he was in command of the department of which Detroit was the head-quarters; and while at that place contributed, in no small degree, to the pacification of the frontier, during the Canadian troubles. He was looked on by the army as one of its fathers. He received 2 brevets, as brigadier-general, July 6, 1822, and as major-general, for long and faithful service, May 30, 1848. Immediately before his death, the chaplain of his corps visited him and sought to speak to him of religious matters. Gen. Brady listened to him, and said, "Sir, that is all right: my knapsack, however, has been packed, and I am ready to march at the tuck of the drum."

BRADY, NICHOLAS, a versifier, born at Bandon, Ireland, Oct. 28, 1659, died at Richmond, near London, May 20, 1726. He was partly educated at Oxford, and partly at Trinity college, Dublin. In the revolution he sided with King William, who made him one of his chaplains, and he served Queen Anne in like capacity. In 1726, just before his death, he published a poetical translation of Virgil, long since forgotten; also a tragedy, and numerous sermons. His reputation, such as it is, mainly rests on a metrical version, in conjunction with Nahum Tate, of the psalms of David.

BRAG, a game of cards, deriving its name from the efforts of the players to impose upon the judgment of their opponents, by boasting of better cards than they possess. As many persons may play as the cards will supply, the dealer giving to each player 3 cards, turning up the last card all round. Three stakes also are put down by each gamster. The first stake is taken by the best card turned up in the dealing round. The peculiarity which gives the game its denomination, occurs chiefly in winning the second stake. Here the knaves and nines are called "braggers," and all cards falling into the hands of the players assimilate to these. For example, 1 knave and 2 aces, 2

knaves and 1 ace, and 2 aces and 1 knave, all count 8 aces. The nines operate in the same way. The third stake is won by the person who first makes up the cards in his hand to 21, with the privilege to draw, or not to draw, as he pleases, from the pack.

BRAGA, a district of Portugal, in the province of Minho; pop. in 1854, 300,607. The capital, of the same name, pop. 16,000, is the archiepiscopal see of the primate of Portugal, the Bracara Augusta of the Romans, supposed to have been founded in 296 B. C. It was the capital of the Suevi, and one of the most celebrated towns in the early Portuguese monarchy, but lost its splendor by the maritime discoveries and the erection of Lisbon into a patriarchate. There is a fine cathedral, built by the first king of Portugal. In its vicinity is the remarkable pilgrimage chapel of the *Bom Jesus*, which stands on the summit of a steep hill, whence there is a magnificent view of the city, and of its picturesque environs.

BRAGANÇA, or BRAGANZA, a district of Portugal, in the province of Trás-os-Montes. Pop. in 1854, 184,838. The capital of the district, of the same name, was in former times the capital of the province, and is a place of considerable importance. It has the ruins of an ancient castle, one of the finest feudal remains in Portugal. It is the see of a bishop, and there is an extensive manufactory of velveteens, printed calicoes, and woollens. The *Alfandega* is one of the most important inland custom houses in Portugal. Bragança has given its name to the present royal family of Portugal. Pop. about 4,000.

BRAGANÇA, HOUSE OF, the present reigning house of Portugal, derived from Afonso, duke of Bragança, a natural son of João I. king of Portugal. The constitution of Lamego, 1183, declares that no foreign prince can succeed to the throne; consequently in 1578, on the death of the Portuguese hero Sebastian, in Africa, without issue, his people had recourse to the illegitimate line of Bragança. Philip II. of Spain, however, claimed the throne, and supported his pretensions by an army under the duke of Alba, who, though in disgrace, was summoned from his retreat for this express purpose. In 1668 the Portuguese shook off the Spanish yoke, and the line of Bragança has continued to rule Portugal till the present time.

BRAHAM, JOHN, an English tenor singer, born of Jewish parents, in London, about 1774, died there Feb. 17, 1856, enjoyed a high reputation; composed several operas, and excelled as a composer of popular songs. He made himself agreeable in society; changed his Jewish name, Abraham, into Braham; became a convert to the church of England, and amassed a considerable fortune, which he lost, however, by unsuccessful speculations.

BRAHE, TYCHO DE, a Danish astronomer, descended from an ancient Scandinavian family, born at Knudstrop, in the old Swedish province of Scania, Dec. 4, 1546, died in Prague,

Oct. 13, 1601. While a student at Copenhagen, aged 14, an eclipse of the sun drew his attention to astronomy; and 2 years afterward, being sent by his uncle to Leipsic to study law, he secretly studied astronomy. In 1571 he returned to Denmark, and began to make astronomy his main pursuit. Soon after, the king gave him the island of Huen, in the sound, and a sufficient stipend for his support. Here the first stone of the observatory was laid, Aug. 1576. After the death of King Frederic, he was deprived of his pension, and being unable to bear the expenses of his observatory, he reluctantly left it. He went to Copenhagen, thence to Rostock, and finally to Prague, where he was received by Rudolph II., and again furnished with means for observation, but died before accomplishing any thing further. Although an accurate observer, he was superstitious, even for his times, and a man of hasty temper. His observations formed the basis on which his friend and disciple, Kepler, established his 3 laws of planetary motion. A new biography of Brahe was published by Pedersen, in Copenhagen, in 1838.—The most eminent member of the same family, in modern times, was Count MAENUS, born 1790, died Sept. 16, 1844, who occupied high stations in the army and the cabinet, and was the intimate friend and adviser of Bernadotte.

BRAHILOV, BRAILOFF, or IBRAILA (Turkish, IBRAHIL), the capital of a district of the same name in European Turkey, the principal port of Wallachia. It is situated on the lower branch of that river, and the harbor, protected by a small island from the ice that drifts down the river in large quantities in winter, affords security to the shipping. The trade consists in the produce of the country, such as barley, wheat, maize, linseed, hides, tallow, timber, and tobacco. The exports of grain, from 1,600,000 bush. in 1838, had increased in 1849 to more than 8,000,000 bush., of the value of about \$2,250,000. The entrances of vessels in 1852, were 1,563, of the burden of 260,621 tons, and the clearances 1,188, with 164,901 tons. This number, however, decreased in 1853, owing to the complication with Russia. The quality of the grain, especially Danube maize, has been of late years greatly improved by storing it in dry and spacious warehouses, instead of, as formerly, in damp pits. The trade is chiefly conducted by Greeks; but many English and other merchants are of late engaged in it. Brahilov suffered much by the Turkish wars in the 18th century, and was burned by the Russians in 1770. Afterward it was restored to the Turks, but surrendered to Russia, Nov. 21, 1809. Since the subsequent treaty of peace of Adrianople, it has continued to form part of Wallachia. March 23, 1854, the Danube was crossed here by a division of the Russian army, under Gortchakoff, and in August of the same year, it was evacuated by the Russians. The town has been rebuilt, and has now many fine streets, several churches, a normal school, a quaran-

tine, a supreme court, and a fair share of shops and bazaars. Pop. 20,000, among whom are many Greeks and Bulgarians.

BRAHMA, BRAHMAN or BRAHMĀ, BRĀHMANA, BRAHMANISM (also written BRACHMANISM and BRAHMINISM). The etymon or radical of these terms is the Sanscrit *briha*, or *vr̥iha*, meaning to move intensely; hence to raise, extend, rise, grow, produce, create; allied to the English brew, breed. Brahma is used to designate the divine cause and essence of the universe. Brahman and Brahmā denote this divine cause personified as one of the Indian *Trimurti* or trinity. Brāhmana means a prayer, and is the name of the argumentative and disciplinary portion of the Vedas. Under Brahminism Europeans understand the religion of Brahma. In the absence of strictly historical records, the origin and development of this creed can only be studied from certain ancient Sanscrit works, viz.: 1. The Vedas (from *vid*, to know), supposed to have been revealed by Brahmā, preserved by tradition, and arranged by Vyāsa. They are in 8 parts: the *Rig Veda* or *Rich Veda*, consisting of hymns and mantras, or mystic prayers; the *Yajus Veda*, in 2 sections, the white and the black, on religious rites; and the *Saman Veda*, with prayers in the form of songs. A 4th Veda, the *Atharvan* (from *atha*, well, and *ri*, to go), is usually added; it consists mainly of formulas of consecration, expiation, and imprecation. 2. The Puranas (from *pura*, ancient, and *ni*, to get or be), also supposed to be compiled by the above-named poet; comprising the whole body of the theology, treating of the creation, destruction, and renovation of worlds; the genealogy of gods and heroes, the reigns of the Manus, and acts of their descendants. There are 18 acknowledged Puranas, the last being the Bhagavata, or life of Kriahna, by some considered as a spurious work. In all they contain 400,000 stanzas. The *Upapuranas*, or minor Puranas, which are of inferior sanctity, are also 18 in number, and are all divided into mantras and brāhmanas. 3. The *Jyotisha* (light of heavenly bodies), on astrology and astronomy, is annexed to the Vedas. In the *Jyotisha* Colebrook finds reason to assign the origin of the Vedas to the 15th and 14th centuries B. C. 4. The *Manavadharmas' astra* (compounded of *Manu*, *dharma*, institute, *astra*, command, law), a system of cosmogony, and next to the Vedas in antiquity. 5. The *Itihāsa* (*iti*, traditional instruction, and *asa*, to be), an account of heroic events, such as the 2 great epic poems, the *Ramayana* (*Rāma*, and *ayana*, dwelling), or legendary narration of the deeds of Rama, the son of Dasaratha, king of Oude, born at the close of the second age, to destroy demons, and Ravana, the sovereign of Ceylon, written by Valmiki; and the *Mahābhārata*, attributed to Veda Vyasa, in 18 cantos, on the wars of the progeny of the moon, or between the families of the Kurus and Pandus. (See BHAGAVAT GĪTA.) Both the Puranas and these epic poems overflow with a chaotic and gigantic

mythology, and exhibit a medley of contending sects. The people to whom this religion and this literature belong are the Aryans (from *aryya*, excellent, and householder, a name originally applied to the Vaisya tribe, but afterward to the whole nation), of the Caucasian race, and speaking the Sanscrit language, who emigrated from the regions about the sources of the Oxus, into the land of the 7 streams, at the epoch of the most ancient hymn-poetry, when yet free from Brahminic trammels, without caste, tending flocks, buoyant with youthful life, eager for strife, and ruled by patriarchs. Their gods were of natural growth: *Dyo* or *Dyau* (Lat. *dies*), the light, the sky; *Varana* (*oupanas*, from *eri*, to enclose), the ocean of light, heaven. The poets of the Vedas afterward produced many divinities; and *Varana*, growing pale in the background of the inaccessible heavens, was thus hidden behind a motley throng of newly invented gods. *Indra* (from *idi*, supreme power) stepped into the foreground, as god of the air, sundering clouds, dispelling mists and droughts, fighting and conquering. *Agni* (Lat. *ignis*, fire) came as the lightning from heaven, consumed the sacrifice, and, as flame, carried the prayers up to the other gods, and became the priest of the gods, and the god of priests. Around and behind these great gods we find hosts of inferior divinities, such as the 12 *Adityas*, forms of *Surya* (or *Savitri*, *Pushan*), or the sun; the twin *Asvins*, offspring of the sun; the gods of the winds, storms, and of other natural phenomena, and of the elements; beside a host of genii, demons, and other fantastic creatures. Vishnu alone occurs in the hymns, without the 2 other members of the Trimurti. Another element of this religion was found in the spirits of the departed, the *Pitris* (Lat. *pater*, ancestors), who received oblations in the abode of *Yama*, the first mortal, and the judge of the dead, an office which he probably first discharged in the moon, and afterward in hell. There is no mention of regeneration or of metempsychosis in the Vedas, although there are passages which speak of souls clad with the breast-plate of Agni, or a spiritual body. There is as yet no system of cosmogony or of theogony. Each god melts into almost every other; all being the inventions of different poets, at different times, among different tribes. Not only real things, but simple relations of things, are deified, and all is as confused as the chaos in Ovid's "Metamorphoses," or as the Titans of the Greeks, or the Virtues of the Romans. While yet in the Punjab, the gods of the Aryans had no temples, and were regaled with *soma* (the sap of *aculepias acida*), milk, clarified butter, and the like, the worshippers striking regular bargains with them for the fulfilment of their wishes, in consideration of value received in the shape of a sacrifice.—We find but few indications of the reasons which prompted the Aryans to wander to the valleys of the Jumna and Ganges. The time of their migration is also unknown. At last they

established themselves between the Himalaya and Vindhya mountains, as far as the Brahmapootra river and the gulf of Bengal, and named this region *Aryavarita*, or holy land. The aborigines, of Turanian origin, were either conquered, and named *Mlech'ch'hachatis* (barbarians, weak, black tribes), and *Dasyus* (lost, enemies, thieves, &c.), or driven into the mountains, and to the south of India, where they yet exist under different names, such as Gonds, Bheels, Radahis, Paundrakas, Odras, Draviras, Cambojas, Kiratas, &c. The Draviras are now divided into Tamils, Telugus, Canarese, Malabars, Talavas, &c., in the Deccan; and all of them speak languages different from the Sanscrit. Even now there is a great difference in the physical characteristics of the nations of Hindostan; the descendants of the Aryans having a higher forehead, a more prominent nose, a more powerful frame, and lighter complexion than the offspring of the conquered races. In the Mahabharata the Brahmin is called white, the Kahatriya red, the Vaisya yellow, and the Soodra black. Color (Sanskrit, *varna*), which the Portuguese first miscalled *casta*, was the ground of the first division of the whole population of India into classes commonly called castes. The strife between these 2 elements of the population lasted for centuries, and is confusedly reported in both the great epic poems above referred to. The *Vispatis* (seniors, patriarchs) became kings, agriculture succeeded to bucolic life, and various empires arose. During the conquest we find 2 castes, namely, the Aryans and Soodras (so called from an aboriginal tribe), or rulers and servants. The more powerful among the former were warriors and landowners, and called themselves *Kahatriyas* (*kahada*, to divide, to eat), and separated themselves in time from the peaceful white men who were called *Vaisyas* (*vis*, to enter fields, commonalty, village). At last the men who had performed the offices of religion for the *Vispatis* (kings) and *Kahatriyas*, under the name of *Purohitas* (*puras*, first, and *hita*, held), or the priests of families and clans, took advantage of the credulity of the people, and in process of time made themselves rulers over all other castes. From saying prayers (*brahmanas*), they became important by the increase of prayers, which were the more resorted to the more the whole people became weaker in body and in mind, more inclined to dream than act, in consequence of the effeminating climate of the country. Traditional legends, the fanciful sacred poems of the several clans, were collected; religious ceremonies multiplied; the priests were more and more employed to beseech the gods for things which the people were too indolent to do for themselves, or to procure by their own exertion. The contents, form, and delivery of the prayers, and the mode of the sacrifices, must be of a character to please the gods; and as the priests alone had the time, knowledge, and experience which were required to induce the gods to grant what was asked for, they became masters of the

Kshatriyas. We read in a later Veda that "the gods do not eat a sacrifice offered them by a king, without a *purohita*." Thus Purohitism, becoming hereditary in certain families, begot the Brahminic caste.—As long as there were enemies to be subdued, the priests upheld the warriors, and consecrated the kings. Thus raised above the latter, they began to supplant, and at last openly to assail them, for the lower castes appear to have been ill-treated by the Kshatriyas. Parasurāma (*parasu*, axe, and *rama*, delighting in) was the hero of the priests in this struggle. He is represented by them as the 6th *avatāra* or incarnation of Vishnu, and a type of their class; he cleared the earth 21 times of the Kshatriyas, filling with their blood the 5 large lakes of Samanta, whence he offered libations to the race of Bhrigu (*bhrishta*, to burn in religious zeal); one of the 10 *Prajāpatīs*, lords of the world, and after having conquered the whole earth, he presented it to the priest Kasyapa. In the tradition of that tremendous struggle occur the names of the rival priests, one Visvāmītra, who had become a Brahmin by dint of superhuman exertions, and Vasishtha, a Bhrigu. By that victory the Brahmins deprived themselves of the military prop of their power; and there arose horrible anarchy in the state, so that the Muni (saint) Kasyapa was implored by the earth to free it from these disorders. He granted the request and restored the Kshatriya caste, by allowing Brahmins to marry Kshatriyas. Thenceforward the warriors remained allied to the priests. Those who would not submit to the new order were treated as heretics and dasyas, and retired to the west of the Sarasvati, which river is the boundary of the holy land.—This alliance was sealed by the system of religious and scholastic doctrines which constitute Brahminism. Indra, the god of the warriors, and the warrior among the gods, was subjected to Brahmā, the god of prayers. The chaos of gods was systematized by grouping several analogous divinities into new and greater ones. The germs of this coagulation were already scattered in the Vedas. After the fusion there remained 8 chief gods, corresponding to the old Varuna, Indra, and Agni, with 8 worlds—heaven, air, and earth. Nighartī, an ancient Vedic glossary, closes with 8 catalogues of gods. The Trimurti, consisting of Brahma, Vishnu, and Siva, was at last reduced to one supreme god. Brahmā, developed out of Agni, in the first instance, as the god of the priests, was sublimated finally into the symbol of prayer and worship, by being made the "mouth of the gods." Prayer consists in the Word (*vak*, Lat. *vox*), which is of many names; bearing and moving all gods; being a queen bestowing treasures; possessed of science; the first thing to be adored; omnipresent, the beginning of all things, &c. (Rig Veda.) In the hymns the sun (Surya) coincides with the *Ātman*, or *Mahan Ātman*, or *Paramatman* (*ātman*, spirit, soul—German *Athem*, *mahan*, magnum, mighty.

parama, primus), or soul of the universe, as the indeterminable *Tat* (that, therefore, and hence; Lat. *ergo*), or pure essence, as the principle of nature. This was before both being and not-being, immense in *svādha* (self, Lat. *sum ipsum*, self-contained associate of the creator); there was nothing out of it or beyond it, but darkness in darkness, indistinguishable water, and all things confused in it or in *avam* (from *ava*, to go, contracted into *aum* and *om*), the mystic name of God, prefacing all the prayers and most of the writings; compounded of the 8 symbols A, a name of Vishnu, U, of Siva, and M, of Brahmā; the 8 in 1. This essence rested in the vacuity which bore it, and the world arose by the force of its devotion or piety. *Kāma* (love, desire) arose first as the first seed. The personified Brahmā was abstracted from the older, absolute Brahma, as the active and incarnate deity. The title of the priests was not taken from Brahmā, but their own appellation of praying men (*brāhmana* reciters) was bestowed on the god; in other words, they deified themselves. The people said: The world is in the power of the Devas (gods); the Devas are in the power of mantras and *brāhmanas* (prayers), and these are in the power of the Brahmins; therefore these are *our* gods. Brahmā says in a Purana: "My gods are the Brahmins; I know of no being equal to you, O Brahmins, by whose mouth I eat." It is also written: "The imperceptible, sleeping universe was rendered perceptible by the lord, with the 5 elements, and with other principles, in purest splendor, to wit, *Prakṛih* (Lat. *pro* and *creo*, facio, Eng. *grow*), or nature, was developed by him, who, perceivable only by the mind, decreed the emanation of creatures, and sent forth the water, placing in it the germ. Out of this came an egg shining like gold. Out of this egg was born God, in the form of Brahmā. As the waters were the first place of motion, the supreme was named *Nārāyana* (*nāra*, water; *yana*, motion, way). After inhabiting the egg for one Brahminic year, the lord severed it, by mere thought, in twain (heaven and earth), putting between them the air, the 8 celestial regions, and the receptacle of water. He pressed out of the *Paramātman* the *Manas* (Lat. *mens*), and the heart (meaning the senses) existing by itself; and he made the former the *Āhankāra* (*aham*, ego; *kara*, agens), or Me. Before the mind he made *Mahat* (might, German, *Macht*). He gave names to all creatures. Many Devas arose, as well as a crowd of *Sādhyas*, or genii. At last he instituted the sacrifice, pressing out of the fire, air, and sun (for the performance of the sacrifice), the 8 eternal Vedas, &c. Dividing his body, the Supreme became half man, half woman, and thus begot *Virāj* (*vi*, separately, and *rāj*, to shine), or the Kshatriya. *Virāj* by himself produced the first *Manu*, the progenitor of the *Prajāpatīs* and the secondary framer of the visible world. Manu, after great austerities, begot 7 *Maharishis* (great saints), who again produced 7 other Manus, Maharishis, and gods of riches

wicked giants, ogres, vampires, celestial musicians and nymphs, dragons, tribes of ancestors, meteors; then minerals, plants, animals. The Brahma wanders through the world, makes periods of time, and destroys them again. When it awakes, the world acts; when it sleeps, the world collapses. After the dissolution of all beings in the Mahat Atman it rests in sleep. The Brahma puts forth the emanation of the world, not as its author, but as both its efficient and material cause. In one passage the Brahma is both formed and shapeless, transient and perpetual, quiescent and moving, external and internal. Elsewhere it is unique, formless, unchangeable, and immovable. The more it is evolved, the more it differs from itself; hence the difference of the properties of things consists only in the degree of the distance from the Brahma. There are 3 *Gunas* (*gun*, to address, advise) or qualities, 3 stages of evolution, 3 regions, 3 worlds. The 1st stage is *Sattva* (*sat*, good, analog. Lat. *satis*), or goodness, divinity of the world, the 1st degree of the emanation of the Brahma, the personified Brahma, purity, light, wisdom, &c. The 2d is *Raja* (*raj*, to color), passion; wavering between the 1st and 3d, the region of man. The 3d is *Tamas* (Lat. *tenebra*), darkness, mischief, impurity, night; the region of animals, plants, matter. The mixture of these produces the multiplicity of things. Nature is the impure, broken Brahma; the world consists of evil life, is a burden of sins, the earth a vale of tears, sin is original. Thus the joyfulness of life pictured in the elder Vedas is obfuscated, self-reliance is broken, and the priest rules paramount. Nor does this end with life; for, as every thing issues from the Brahma, so every thing returns into it. Here arises the theory of metempsychosis, or of soul-wandering. All beings return by purification into the Brahma. The condition of beings depends on the degree of the phase of emanation. Mahanütma runs through all forms of matter. Formerly, each soul ran through the whole scale of beings, but later its *guna* or quality was influenced by its merits or sins in a former existence. The universe was peopled of old by homogeneous souls, without a difference between gods, men, animals, or matter, the souls of all differing merely for a certain time. "We were what you are; you shall be what we are." Thus souls differed merely on account of the redeemable sins of a previous life. At a later time the individual man might become the vilest animal for a single error in the most trifling action of life, and might lose the benefit of many good lives during millions of years. The horror of this to the Hindoo is enhanced by his antipathy to motion. And then, Naraka or hell is superadded, under Yama, the restrainer (analogous to Pluto), and from it the migration of souls begins again. Manu speaks even of 28 hells.—This system of theology was elaborated several centuries before Buddha. The *Upanishads* or speculative sections of the Vedas, and the rudiments of Manu's laws, belong to this period. The *varnas* (colors, castes) were

divinified by these theories of emanation and of metempsychosis. Brahmā, the first impersonation of the Brahma, first exhaled the priest from his mouth, then he brought forth the warrior from his arms, the agriculturist (*Vaisya*) from his hips, the lowest caste (*Soodra*) from his feet. The Brahmin's inheritance was wisdom, virtue, holiness; his duties were the reading and teaching of the Vedas, sacrificing, giving alms, if rich, receiving gifts, if poor. To the Kshatriyas were allotted force, the defence of the people, giving alms, guarding against sensuality. The Vaisyas obtained riches, herds, the bestowing of gifts, commerce, agriculture. Both the latter could also read the Vedas, and offer sacrifices. The lot of the Soodras was to serve the 3 superior castes, and to be despised by them. The world belongs to the Brahmin. To him all other men owe every thing, even life itself. The 3 privileged *varnas* are *Dvijas* (*dvi*, two, *ja*, born), or twice-born; the investiture with the thrice holy string, at puberty, constituting their 2d birth, and making them participants in common sacrifices. This social and hierarchic system was presented as existing from and for eternity. Although a Soodra can be reborn even as a priest, if he has led a holy life, during his life he can as little enter a higher caste as a stone can become a plant. At the time of the older laws of Manu the separation of castes was not yet total, intermarriages being still allowed. The descendant of a Soodra and Vaisya could marry a Vaisya, or the offspring of the intermarriage of either of those castes and a Kshatriya could marry a Kshatriya; the descendant of such an intermarriage with a Brahmini could marry a Brahmin, who could marry from a lower caste only the second time. But afterward, only the offspring of parents of the same caste belong to their caste; children of mixed marriages lose the castes of both parents; and the offspring becomes the more impure the higher the mother above the father. There are 6 degrees of bastards. The son, for instance, of a Kshatriya by a Soodra is a *Ugra* (*uj*, to heap up), doomed to catch animals that live in holes. He is not so low if the castes of the parents are reversed, the lowest of all castes being the offspring of a Soodra by a Brahmini, viz., a *Chândāla* (*chādī*, to be angry, to chide), forced to live far from the dwellings of all other men, to bear a badge that he may be avoided, to be an executioner or grave-digger, to wear the dress of condemned criminals, to eat from broken vessels, &c. But the mixtures of the 3d degree, by the crossing of bastards with the upper castes, or among themselves, are even more abominable than the Chândāla, the Pariahs subdividing themselves into lower and lowest races, which reciprocally abominate each other. These multifarious distinctions grew up, not merely by priestly devices, but also historically and ethnically; as the mixed races appear to be of national origin, such as the *Vaidēhas* (from Videha, a district of Behar), attendants on ladies; the *Magadhas* (a province in the south of

Behar), bards, minstrels o. sovereigns, of armies, &c. Some owe their origins to their trades, such as the *Nishādas*, or fishermen.—Beside these social distinctions, the Brahmins prescribed a most complicated system of rites, ceremonies, sacrifices, ablutions, consecrations, fumigations; a most strict and minute religious etiquette to be irrevocably observed in all motions, gestures, looks, at all seasons, in every part of the day, at every age, at births, marriages, funerals, at meals, in sleeping, at all instinctive and necessary functions of the body; for greeting, giving thanks, or trading; in short, for all commissions and all omissions of every possible kind. All these prescriptions are most anxiously to be observed from the first breath of life to the last gasp in death. For the most trifling deviation from any one of these innumerable observances, the soul of the delinquent was to suffer various degrees of punishment in its wandering. Still greater was the danger of becoming impure or defiled by the contact of a *Ohandala*, of a corpse, of animal offal, by treading on a defiled spot, by using unclean vessels, by the breath of a garlic-eater or brandy-drinker, by the excretions of one's own saliva, sweat, tears, &c. Unless every stain was wiped out by religious purification, hell was open to swallow the sinner. The religious therapeutics against these horrors consisted of all sorts of lotions, potions, anointings (for instance, with cow-dung), for lesser sins; and, for greater ones, in prayers, retention of the breath, the drinking hot water, milk, butter, and the urine of cows, torture, and even suicide. A *Dwijas* who had drunk arrack (rice-brandy) must drink it boiling until his entrails were burnt, &c. An involuntary cow-killer had to shear his head, to be clad in her skin, to live for 8 months on her pasture, tending a herd day and night in all weathers, to greet and to caress the cows. Where a Brahmin had to give, as fine, a cow to the temple, a *Kshatriya* must give 2; a *Vaisya*, 4; a *Soodra*, 8. The lower the caste, the greater the penalty imposed on sinners.—The complement of the penitences, penances, and inflictions, consisted in ascetic and eremitic life. On the Ganges the Aryans sought repose in forests, where they lived on vegetable food. *Manu* says that when a *Dwija* perceives his body flagging, his hair becoming gray, when he sees the son of his son, he must leave home and retire into the solitude of the forest. His wife and the sacred fire may follow him. He is to live on herbs, roots, and fruits; to dress in the skin of a black antelope or in bark; not to cut his hair or nails; to bathe in the morning and evening; to busy himself only with the *Veda*, with sacrifices, prayers, and the contemplation of the *Brahma*; to approach perfection in piety and science; to chastise his flesh, in order to render it insensible to pain, so that the bonds of the soul may be loosened; to creep about or to stand for days on his toes; to sit in the hot season between 4 fires (making 5 with the sun); to wear wet clothes in the cold, and

be unsheltered from rain, and the like. After having thus burnt out his lusts and desires by the *Tapas* (sun and fires), he is allowed to enter the 4th and last stage of life, to become a *Sannyasin*, or renouncer, free from all desires, a mendicant, without any property. Before these 2 last stages of life, a Brahmin must pass through the 1st, which is that of a *Brahmacharin*, follower of the *Vedas*, or student, from the time of his investiture with the cord; the 2d, that of a *Grihastha*, or householder, or father of a family; it being one of the duties of a Brahmin to marry and to beget a son, thus paying his debt to his ancestors. In progress of time total abstinence from marriage, as impure, became more venerable, and he was the highest Brahmin who immediately entered the 4th stage, by stepping over the intermediate 2, and by vowing perpetual chastity.—In the beginning of Brahminism *Karmmas*, or deeds, works of religion, sufficed for salvation; but subsequently, a contrary doctrine prevailed, the effect of works being believed to vanish with time. Atonement for sin became possible; the contemplation of the *Brahma* alone could lead into salvation, that is, back into the *Brahma*; so that even the most orthodox Vedantist looked down pitifully upon those who believed in the *Vedaic* efficiency of works. Later even the *Kshatriyas* and *Vaiśyas* were allowed to become *Vanaprasthas* and *Sannyasin*, and thus an opposition to Brahminism grew up, leading at last, with a reaction against the extreme theologic terrors of which we have spoken, to a reform by *Buddha*, who found aiders and abettors in the *Sramanas* (*Srama*, to be wearied), whose theory was to gain final emancipation from existence by meditation.—In spite of its inconsistency with the Brahminic system, a free will was admitted to reside in the soul, and thinking was allowed to some degree. Hence resulted philosophic opinions and schools, among which the 3 following were the principal: 1. The *Vedānta* (*Veda*, and *anta*, end, aim) or *Mīmāṃsā* (scrutiny, speculation), a double system of tradition and of free speculation, combining the *Brahma-Mīmāṃsā*, or higher science, whose dicta were supported by holy writ, and the lower, whose object was the *Vedas* and their preliminaries and appurtenances, such as grammar, traditions, exegesis respecting the fruits of works, sacrifices, &c., or theology proper. The *Brahma* was metaphysically explained and commented upon. The soul of man had 3 corporeal forms, viz.: 1, the causing, or effective body; 2, consisting of subtle elements, often accompanying the pure soul in its migrations until its salvation; 3, the coarse material body, begotten by parents, and dissolved by death. He who turns away from all that is changeable, and contemplates unflinchingly the one, eternal, unchangeable, true, to wit, the *Brahma*, and who also renounces all lusts and desires, becomes one with it, and attains liberation. Nature is only a determination, a limitation, a special quality and quantity of the *Brahma*. And yet the *Brahma* is said to be

nature. Even after it has been separated it remains one as before. This contradiction was explained by the changes of the forms of water, as liquid, ice, hail, snow, steam, invisible vapor, and of other matter. The Vedānta concluded with this sentence: "The world exists not, only the Brahma is." The appearance of the world was accounted for, first by merging it in the Brahma, then from it into the conception of man, who perceives it. *Māya* (*mā*, to measure), or illusion, idealism, unreality of all worldly existence, is the wife of Brahma, and the immediate active cause of creation; she is indefinable, both being and not-being; at the same time she also only seems to be. Finally, the Vedantist arrives at the great principle, "*Tat* art thou"—"I am the Brahma." This recognition leads to liberation, salvation, union with the Brahma. He who thinks himself to be the universal Self, knows of no individuality, or reality, or subjectivity. The cycle of births is ended to him, and age and death are mere phantoms, phenomena of ignorance. This extinction in the Brahma is named *Brahma-nirvāṇa* (Brahma-absorption). These doctrines lead inevitably to indifference in theology, to the levelling of castes, and they paved the way for Buddhism; although they were not discountenanced by the Brahmins, who are said to have even declared that the *Śāstras* (law-books) were not made for philosophers; that the order of castes and of professions was only for egotists; that the castes belong to *Māya* formations, having no place in the Atman; and that for him who knows nothing, as well as for the sage who is lord of all and knows all, there is no difference between commandments and prohibitions, as these are fit only for him who knows a little and yet knows naught. II. Much more hostile to the Brahmins was the spirit of the *Sāṅkhya* (numeral, reckoning, rational) philosophy, which occurs merely as a name, and not as a doctrine, in the later Upanishads, and which declares that reason suffices for the discovery of truth, and for enfranchisement; thus opposing the authority of revelation. This is the earliest complete philosophic system known. Its founder is said to be the Muni (saint) Kapila, son of Kerddama by Devahuti, believed by some to have been an avatara of Vishnu, and who became mythic in Brahminic tradition. The soul forms the basis of this school, according to the Vedic passage: "It (the soul) must be known; it must be distinguished from nature; then it does not return, does not return again." There are 3 sources and ways of knowledge, sensual perception, induction, and testimony, including revelation which is held, according to this school, to be not superior but only collateral to the revelation in the mind of the sage. While the Vedānta does not distinguish the subject from the object, the knowing from the known, spirit from matter, the *Sāṅkhya* is dualistic throughout. Its 2 factors are nature and the soul. The first is creative, but blind, recogniz-

ing nothing that proceeds directly from the intelligence (Buddha). Out of the latter flows the Ahankara (self-hood, *ego cres*), the producer of elements. The soul is not creative or active, but knows and observes. Both are eternal and uncreated; but nature is blind, while the soul is lame, conducting and leading the former, by which it is carried in its turn. The Ahankara begets: 1, the *Tanmātra* or 5 rudimentary elements, and the phenomena or faculties of sound, feeling, sight, taste, smell; 2, the 11 organs, of which 5 are of perception (ear, skin, eyes, tongue, nose), 5 of action (voice, hands, feet, organs of excretion, genitals), and the *Manas* (*man*), organ both of perception and of action. Out of the 5 rudimentary elements issue 5 coarse elements, ether, air, light, water, earth. These natural principles, variously modified by the 3 *guṇas*, play a great part in the doctrine of the *Sāṅkhya*. Opposed to them is the human soul, as an infinity of all individual souls which have entered nature, and whose first husk or envelope is the spiritual or original body, or the *Linga* (mark, genital part, Prakriti), or *Linga Sarira* (*śrī*, Lal, *śrī*, to know), consisting of the Buddhi, Ahankara, Manas, 10 organs, and the 5 original elements. Its second hull or pod are the 5 coarser elements, and this body is rebegotten by the parents before each new birth. The soul seems to be active, while only the *Linga* really acts. The concatenation of moral causes and of effects determines the re-birth in a certain sphere. Therefore nature itself performs the metempsychosis. Soul and nature part company at the goal of their journey. As soon as the soul comprehends itself as independent of nature, and as absolute by itself, nature hides itself like a woman whose weakness has been found out. This withdrawal is the enfranchisement (called *Karika*, which also means actress, a dancing woman) of the soul. This distinction is the perfect and infinite science or *Jñāna* (*gyāna*). With the death of the body the activity of the *Linga Sarira* ceases, and this is the condition of a new birth. The *Sāṅkhya* is silent on the state of the enfranchised individual soul. III. The atomistic school, which is of less importance than the preceding.—Our limits allow us merely to add a few data in the shortest compass, as it would require volumes to present the complete details of Brahminism. Siva (*śiv*, to sleep) seems to have been borrowed from the aborigines in the neighborhood of the Himalayas; being the destroyer, he is worshipped in fear. The most active partner of the *Trimurti* is Vishnu (*viś*, to pervade), the preserver of the world, asleep on the sea-serpent Śaśa during the periods of annihilation; incarnated in order to save the germs of life when they are in danger. Ten such avatars are generally admitted, namely, as fish, tortoise, boar, man-lion, dwarf, 2 Ramas, Krishna, Buddha, in the past, and Kalpi in the future, when he is to destroy the world. Brahmā has been already spoken of. Although Vishnu is often called the first-born

of Brahmā, and often his substitute, he is also represented as prior to him. All gods, indeed, emanate mutually from each other. In the principal cosmogony, Vishnu swims on the ocean; a Padma (*Nelumbium speciosum*, commonly called lotus) rises from his navel, bearing Brahmā as its flower; the pistil being the holy mountain Meru, the stamens and nectaria being the peaks of the Himalayas, and the 4 petals the *Drīpas* (peninsulas), as parts of the earth. The top of the mountain is named Sumeru (excellent, radiant), as the abode of the celestials in the centre of the earth, with 4 de-clivities. In every *Kalpa* (*krip*, to be able), a day and night of Brahmā, containing 4,818,272,000 solar years, an interval from creation to creation, there are 14 successive Manus (*mana*, to know) as presidents of the universe during a *Manvantara*, with its interval of a deluge for 808,448,000 years of men, and having its own Indra. In the present creation there have been 6 Manus, of which *Manu Swayambhūva* (the self-existing) is the first and the supposed revealer of the laws.—The laws originate either from revelation or from human wisdom. They treat of the following subjects: 1, theory of *Dvijās*, or second birth; 2, *Sanskara*, or the 10 sacraments for all periods of life; 3, *Brahmachārin*, or the religious disciple, before he becomes the father of a family; 4, choice of a spouse; 5, matrimony; 6, modes of the 5 principal oblations; 7, *Śraddha*, or funeral rites; 8, duties of men and women; 9, hermits or anchorites; 10, ascetics; 11, duties of the castes; 12, metempsychosis.—In Brahminic chronology, 18 Nimeshas (twinklings of the eye) are equal to 1 Kaṣṭha; 80 Kaṣṭhas to 1 Kala; 80 Kalas (48 of our minutes) to 1 Muhurttā; 80 Muhurttas to 1 day and night; 1 month of men to 1 day and night of the *Pitris* (ancestors); 1 year of men to 1 day and night of the gods. The time of the present creation consists of 4 Yugas or ages (*Lat. jugis*, everlasting), viz.: 1, Satya (true) or Kṛita (perfect) Yuga, comprising 1,728,000 years; 2, Treta (*trat*, to preserve), 1,296,000 years; 3, Dvāpara (*dva*, doubt, and *para*, after), 864,000 years; 4, Kali Yuga (*kala*, to count), which began 8,101 years B. O., and at whose close, in its 432,000th year, the world is to come to an end. The Yugas have deteriorated successively from gold to iron.—The reaction against the inhuman laws of Manu was slowly preparing, and at last Buddha Sakyamuni (see BUDDHA AND BUDDHISM) broke the spell by disregarding castes. Buddhism became the state religion of India; the dynasties in the chief cities were then Soodras; edicts were published in the vulgar dialects; Brahminic sacrifices were abolished; monasteries for all ranks and both sexes rose over the whole country. But toward the end of the 4th century A. D., when the Chinese pilgrim Fa-hian visited India, a Brahminic reaction was already taking place in some regions; and during Hsuenthsang's visit (middle of the 7th century), Buddhism was losing ground rapidly, some of its most sa-

cred buildings being in ruins. Subsequently the Brahmins regained their influence, exterminated the heresy of Buddha in India, and reestablished orthodoxy under Sankara-Acharya, reenacting the laws of caste more rigorously than ever. Though Manu's laws still spoke of the old 4 castes, the long reign of Buddhism had left but one distinction, the pure caste of the Brahmin and the Varnasankaras or mixed castes of the people. Now a few families claim, without being able to prove it, the titles of Kshattriyas and Vaisyas, and a few can even lay claim to the pure blood of the Soodras. After this nearly total extinction of the political castes, a new system of a professional character came in. The rules of the present castes, sometimes trifling in appearance, are observed with greater anxiety than even the laws of religion. Thus if a Hindoo porter were to bring water to his master, he would be excluded from his caste, as certain trades are carried on by certain castes. Hence the priests, having the most lucrative trade, are the strongest advocates of the system. There is something reciprocal in caste, and no one is ashamed of his own, the lowest Pariah (so named from the bell by which, in former times, he gave warning against being approached by a Brahmin) being as proud of his own caste as the Brahmin. The Turas (*tura*, to hurry) consider their houses defiled and throw away their cooking utensils, if a Brahmin visits them. The man of the lowest order turns away his face with great disgust, if he be invited to a feast with a European of the highest rank. The prohibition of intermarriages is not only a result of caste, but also of pedigree, if the couple be of the same caste. Kulins (well born), Srotrigas (well behaved), and other sorts of Brahmins will eat together, but have scruples about allowing their children to intermarry. The 6 divisions of Tatis (weavers) neither visit each other nor intermarry. A great change has been wrought, and is going on, with regard to this condition of society among the Hindoos. Brahmins often violate the laws of Manu, by taking gifts from Soodras, by sitting at the feet of a Soodra, on the same carpet, if he be a rich banker, &c. The president of the Dharmaśabha (tribunal of justice) at Calcutta is a Soodra, while the secretary is a Brahmin. Three-fourths of the Brahmins in Bengal are servants of others. Many traffic in alcoholic liquors, some in cattle for butchers, and wear shoes made of the skins of cows. Many of the present missionaries are bent upon the abolition of caste; some of the early Catholics went too far in tolerating it. The British government have been urged to interfere with caste, by protecting the lower against being treated with indignity; for instance, in Malabar, where a Nayadi defiles a Brahmin at a distance of 74 paces, and would be shot by a Nayer, though himself a Soodra, if he approached too near.

BRAHMAPOOTRA, or BURRAMPOOTER ("offspring of Brahma"), one of the largest rivers of Hindostan, the source of which has never

been accurately defined. It appears, however, to rise in Thibet at the E. extremity of the Himalaya mts., about lat. $28^{\circ} 30' N.$, long. $97^{\circ} 20' E.$, whence it flows S. W. and W. into Assam, where it is joined by the Dihong, the Dihong, and other streams. The Dihong, sometimes called the Bramapootra, and also known as the Sanpoo, rises N. of the Himalayas near the N. W. frontier of Nepal, and unites with the Bramapootra proper in the N. part of Assam. The river formed by this junction flows 75 miles S. W. and then diverges into the Boree Lohit and the Dihing. Uniting again after a divided course of 65 miles, it flows W., through the district of Goalpara, winds around the W. foot of the Garrow hills, separates Goalpara and Mymensing from Rungpoor, and after sending off a branch called the Konaia, which joins it again further down, runs S. E. for 180 miles. It then changes its name for that of Megna, receives part of the waters of the Ganges through the Kirtynassa, and after various windings enters the bay of Bengal by 8 channels: the Ganges on the W., the Shabazpoor in the centre, and the Hattia on the E. Its total length, from its source to the bay, is 933 miles; but including the Sanpoo, it is about 1,400 miles. It is navigable from its mouth to the Dihong, by the ordinary vessels of the country, and for some distance further by canoes. Through the last 60 miles of its course it is from 4 to 5 miles wide, and studded with islands. Its waters are thick and dirty; its banks are mostly covered with marshes and jungles, and are subject to annual inundations. During the season of the overflow, from the middle of June to the middle of September, the level districts of Assam are almost wholly submerged, so that travel is impossible, except on causeways 8 or 10 feet high. The volume of water discharged by the river at such times is immense. Even in the dry season, it is equal to 146,188 cubic feet a second, while in the same time, and under the same circumstances, the Ganges discharges only about 80,000.

BRAIDWOOD, THOMAS, one of the earliest teachers of the deaf and dumb in Great Britain, commenced in 1760 a school for their instruction at Edinburgh. He followed the system of Heinecke and others, giving great prominence to articulation, and "reading from the lip." His processes were kept a close secret in his own family for many years. He taught with considerable success at Edinburgh till 1783, when he removed to Hackney, near London, continuing his school till his death, in 1806, when it was carried on by his widow and her grandchildren. When, in 1816, Mr. Gallaudet, the pioneer of American instruction of the deaf and dumb, applied to the Braidwoods, or their relatives, who had charge of all the schools for deaf mutes then existing in England, for instruction, in order to enable him to establish an institution in this country, it was refused, except under circumstances and with restrictions to which he could not consistently submit. The school of Mr. Braidwood,

at Edinburgh, was visited in 1773 by Dr. Johnson, who spoke of it with high commendation, as did also Lord Monboddo, who visited it in the same year. An American gentleman, whose son had been educated by Mr. Braidwood, published, in 1788, a little pamphlet entitled *Vox Oculis Subjecta*, in which he gives some account of the school.

BRAILLE, LOUIS, the inventor of the method of writing with points, now in general use in institutions for the blind, was born at Lagny, a suburb of Paris, in 1809. He was blind from birth, and at the age of 10 years was admitted to the royal institute for the blind, where his talents and attainments, both in science and music, soon rendered him eminent. In instrumental music he has attained a very high rank, being one of the most distinguished organists of Paris, and excelling also as a violoncellist. In 1829, at the early age of 20, he had formed the idea of so completely modifying M. Charles Barbier's system of writing with points, as to render it practicable and convenient, and it was introduced into the royal institute not long after, though no account of it was published till 10 years later. It is now adopted in most of the continental schools, and has recently been introduced into the New York, Maryland, and Illinois institutions, and the imperial institute for the blind at Rio Janeiro. The signs are 43 in number, embracing the entire alphabet, and all the diphthongs, and marks of punctuation. Of these, 10, called the fundamental signs, are the basis of all the rest. These signs, which represent the first 10 letters of the alphabet, and the 10 Arabic numerals, are as follows:

A	B	C	D	E	F	G	H	I	J
·	· ·	· · ·	· · · ·	· · · · ·	· · · · · ·	· · · · · · ·	· · · · · · · ·	· · · · · · · · ·	· · · · · · · · · ·
1	2	3	4	5	6	7	8	9	0

By placing one point under the left side of each fundamental sign, the 2d series are formed, comprising the next 10 letters; by placing 2 points under each fundamental sign, the 3d series, comprising U, V, X, Y, Z, Ç (C soft), È, À, È, U, are formed; by placing one point under the right side of the fundamental signs, the 4th series, embracing Á, É, Í, Ó, Ú, Ê, Î, Û, Æ, W, are formed. Three supplementary signs represent Ì, Æ, and Ò. The marks of punctuation are the fundamental signs placed 2 lines below. The system has been applied to musical notation in such a manner as to make the reading and writing of music much easier for the blind than for those who see. The 7 notes are represented by the last 7 of the fundamental signs, and each of these notes may be written in 7 different octaves by merely prefixing a sign peculiar to each octave, and thus the necessity of designating the key of each musical sentence in the ordinary way is avoided. The mode of writing is very simple. The apparatus consists of a board, with a surface grooved horizontally and vertically by lines $\frac{1}{4}$ of an inch apart. Over this board a frame is fitted like that of the common map delineator,

and one or more sheets of paper being placed over the board, the points are made with a bodkin, through a slip of tin perforated thus, ::, which contains all the changes used in the system. As the sheet must be reversed to be read, the writing should be from right to left, that it may be read from left to right. Of course several copies may be made by one operation, if desired. Of late, books have been printed in points, by the French and other continental institutions. The system commends itself by its simplicity, its easy acquisition, and the facility with which it enables the blind to express their thoughts on paper, and afterward read and revise them themselves. M. Braille has been, since 1840, a professor in the royal (now imperial) institute for the blind, at Paris.

BRAIN, a collective term, embracing those parts of the nervous system (excluding the nerves) which are contained in the cranial cavity, viz.: the brain, in its popular signification, or the cerebral hemispheres; the *cerebellum*, or little brain; and the *medulla oblongata*, or the upper part of the spinal cord. Each of these has its special and distinct part to play in the animal organism. This alone, of the animal tissues, is directly influenced by the mental acts of living beings, and through this are effected the mutual reactions of mind and body; the phenomena of sensation and volition, and the mysterious agency of intellect and instinct, are all manifested through the channels of the nervous centres, the most important of which is the brain. The peculiar substance through which all these actions take place exists in two forms, the vesicular and the fibrous. The vesicular nervous matter is gray or ash-colored, granular in texture, containing nucleated nerve vesicles, largely supplied with blood, and is the originator of nervous power; it is sometimes called the "cortical substance," from its forming a thin layer over the exterior of the brain; it is also found in the centre of the spinal cord. The fibrous nervous matter is generally white, firm, and inelastic, composed of tubular fibres; it is less vascular than the other, and constitutes nearly the whole of the nerves, and the greater part of the spinal cord; it simply propagates the impressions sent to or from the vesicular matter. The two kinds do not occur together except in the nervous centres. In the vertebrated animals, nervous matter is a soft and delicate substance, owing the greater part of its tenacity to the vascular and fibrous tissues connected with it. The chemical composition of nervous matter has been well ascertained by Fourcroy, Vauquelin, and Frémy; but the distinguishing characters of the gray and white substance are as yet imperfectly known. Fourcroy notices the great amount of water in the cerebral matter, from $\frac{1}{3}$ to $\frac{1}{4}$ of its weight, upon which its softness is in great part dependent. According to Vauquelin's analysis in 1812, the brain is an emulsive mixture of albumen, fatty matter, and of water holding in solution saline and other matters common to it

with other tissues. The following table gives the result of his analysis:

Albumen.....	7.00
Cerebral fat.....	5.23
Phosphorus.....	1.50
Osmazome.....	1.13
Acids, salts, sulphur.....	5.15
Water.....	80.00
	100.00

The medulla oblongata contains more cerebral fat, but less albumen, osmazome, and water. Frémy's analysis, published in the *Annales de Chimie*, 1841, confirmed that of Vauquelin, and showed the following proportions: 7 parts of albumen, 5 of fatty matter, and 80 of water; he extracted from the fatty matter the following secondary principles: 1, cerebrie acid, a white, granular, crystalline substance, containing no sulphur, a little phosphorus, and 66 per cent. of carbon; 2, oleophosphoric acid, separated from the cerebrie by its solubility in ether, containing about 2 per cent. of phosphorus in the condition of phosphoric acid, and combined with elaine; 3, cholesterine, the same as that obtained from bile (brains preserved in alcohol are apt to be surrounded by a crystalline substance resembling cholesterine); 4, traces of elaine, margarine, and fatty acids. The brain is remarkable for containing phosphorus, which varies in quantity at different periods of life, being the least in infancy and old age; the maximum of water is found in infancy, an interesting fact in connection with the serous effusions so prevalent at this period of life; it has been ascertained that the idiot brain contains less phosphorus than the normal organ, this being diminished from nearly 2 to less than 1 per cent., indicating possibly an important hint for the treatment of diseases accompanied by deterioration of the mental powers. The microscopic elements of nervous tissue are fibres and cells. The fibrous nervous matter, or white central substance, contains tubular fibres or nerve tubes, and the gelatinous fibres found chiefly in the sympathetic system. The white fibres are membranous cylinders, of a pearly lustre, lined by a darker layer, called the "white substance of Schwann," and filled with a transparent substance, "the axis cylinder" of Rosenthal; the lining of the white substance is less evident in the brain than in the spinal nerves; these fibres vary from $\frac{1}{1000}$ to $\frac{1}{100}$ of an inch in diameter, presenting at some points a swollen appearance; they do not communicate with each other like the vessels, nor divide into smaller fibres, but continue unbroken from their origin to their final distribution, insculpting only at their terminal loops. The gelatinous or gray fibres seem to be solid, flattened, transparent filaments, varying in diameter from $\frac{1}{1000}$ to $\frac{1}{100}$ of an inch; the mode of their connection with the elements of the nervous centres is unknown. The essential elements of the vesicular or gray nervous matter are cells, or vesicles, containing nuclei and nucleoli; they are dark, generally globular, but at times very

irregular and variously elongated, enclosing a grayish granular substance, and sometimes pigment granules; they vary in size from $\frac{1}{100}$ to $\frac{1}{10}$ of an inch in diameter; among the largest of these are the caudate, so called from the irregular tail-like processes extending from them. The nerve vesicles are imbedded in a soft granular matrix in the brain. The nervous centres exhibit the union of these two forms of matter, more widely separated in the brain than in the smaller ganglia; indeed, the cerebral hemispheres are composed internally of fibrous matter exclusively, surrounded by a layer of the gray vesicular substance, into which the fibres are also prolonged. As to the development of nerve fibres, they appear, according to Schwann, to be formed in the same manner as muscles, viz., by the fusion of a number of primary cells arranged in rows into a secondary cell, though the primary nervous cell has not been previously distinguished from other cells out of which organs are formed; the perfect vesicular matter presents the primitive cells in a persistent condition. The tubular fibres seem to be capable of regeneration to a certain extent; if a nerve be divided, but the ends not separated, union may take place, and the nerve resume its office; even when a portion is excised, it appears that true nerve fibres, in smaller number than in the nerve itself, may be developed in the uniting substance, as shown by partial restoration of function, and microscopic examination. When a portion of the brain is removed by accident or design, its place is supplied by new substance; but whether this be true cerebral substance or not, has not been satisfactorily determined. The white fibres may be distinguished, according to their physiological office, into 3 kinds—efferent or motor, afferent or sensitive, and commissural or connecting. Henle suggests that there may be a 4th series, associated with the operations of thought. Of the mode in which the afferent nerves terminate, and the motor nerves commence in the central organs, it may be said that 3 principal modes have been ascertained, in which there is an actual continuity from one form of nerve tissue to the other: a globular unipolar cell may give out a single prolongation, which becomes a fibre; or a nerve cell may be found in the course of a tube, with each extremity prolonged into a fibre; or some of the radiating prolongations of the caudate cells may become continuous with the axis-cylinders of nerve tubes, or inosculate with those of other caudate cells. A curious circumstance in connection with the gray matter, is the large quantity of pigment or coloring substance in it, apparently forming one of its essential constituents, as it is everywhere present, though in some situations more abundantly than in others; it has been asserted that this bears a close resemblance to the coloring matter of the blood, and, if so, it is a fact of great interest to physicians, who can avail themselves of the restorative properties of iron in cerebral diseases, improving

the quality of the nutrient blood by increasing the quantity of the red globules.—The central column or spine of the vertebrate skeleton encloses in its canal the spinal cord; and the cranium, which is a series of modified and expanded vertebrae, protects the continuation of the cord and its expansion into an aggregate of gangliform swellings, the brain or encephalon. The brain is enclosed in 3 membranes, or *meninges*, continuous with those of the spinal cord, which will be described under that head. From without inward, these membranes are the *dura mater*, *arachnoid*, and *pia mater*. The term *mater* ($\mu\eta\tau\eta\rho$, mother) originated with the Arabians, who considered these membranes as the parents of all others in the body. The *dura mater* is a membrane of white fibrous tissue, strong, flexible, but not elastic; its fibres are arranged on different planes; it is freely supplied with blood-vessels, and is perforated for the passage of nerves, and, according to Arnold and Pappenheim, has some branches between its own laminae. It forms the internal periosteum of the skull, and is closely applied to the cranial bones, and in some places firmly adherent, especially in youth and old age. From it processes are given off, which serve as partitions between the cerebrum and cerebellum behind, and between the cerebral and cerebellar hemispheres; these processes are the *fals cerebri*, which separates the great hemispheres, extending on the median line from the forehead to the occiput, along the sagittal suture; it is falciform in shape, its lower border concave and corresponding to the convexity of the *corpus callosum*, and its upper border enclosing the great longitudinal sinus; narrow in front, and deep behind, having the inferior longitudinal sinus along its posterior border. The *tentorium cerebelli* extends horizontally between the posterior cerebral lobes and the cerebellum; it is attached to the falx cerebri, and to the occipital and petrous portion of the temporal bones along the groove for the lateral sinus; in the cats and some other leaping animals, this membrane is partially replaced by bone, doubtless to prevent injury from sudden shocks. Between the lobes of the cerebellum descends vertically from the tentorium the *fals cerebelli*, containing the occipital sinuses. Next to the *dura mater*, which also furnishes sheaths for the nerves and vessels at their origins, lies the *arachnoid*, the serous membrane of the cerebro-spinal cavity; it consists of 2 layers, the outer one closely adherent to the *dura mater*, and the inner one loosely to the *pia mater*; the space between the 2 layers is the arachnoid cavity, and that between it and the *pia mater*, the sub-arachnoid cavity; resembling other serous membranes, the arachnoid is liable to become inflamed with the effusion of fluid into one or both of the above cavities, especially toward the base of the brain. The sub-arachnoid space is filled with what is called the "cerebro-spinal fluid," varying from 2 to 10 ounces in quantity, and keeping during

life the opposed arachnoid surfaces in contact; it is most abundant where the brain has shrunk either from disease or old age. From the experiments of Magendie it appears that its presence is necessary for the healthy action of the nervous centres; when removed, it is quickly formed again; it is a limpid, alkaline fluid, doubtless secreted by the pia mater, and affords mechanical protection to the brain and spinal cord by the interposition of its yielding medium between them and the bony cavities which surround them; its accumulation at the base of the brain is highly favorable for the protection of the large nerves and vessels there situated. It is not probable that this cavity communicates with the ventricles of the brain. This fluid exists in an increased quantity in the brains of idiots; and, whenever the cranial or spinal walls are deficient, as, for instance, in *spina bifida*, an accumulation of the fluid becomes prominent at the part, thereby protecting the nervous substance. The third membrane immediately investing the brain is the *pia mater*, composed of white fibrous tissue and blood-vessels; in the skull it is very delicate and very vascular; it adheres to the surface of the cerebral and cerebellar hemispheres, and sends innumerable minute vessels to their substance; it sinks into the fissures and sulci, and penetrates into the ventricles, forming the *choroid plexuses* and the *velum interpositum*; its minute ramifications are sometimes incrustated with sandy particles, consisting principally of phosphate of lime. The pia mater is the medium of nutrition to the nervous substance and to the arachnoid; and hence any inflammation of these membranes would be communicated to the superficial gray matter of the brain, the seat of its physiological activity. Along each side of the longitudinal sinus it is common to find a series of depressions in the dura mater; these are due to the presence of whitish granules, called Paccchionian glands, from their first describer, of an albuminous material, arising probably from a deposit of granular lymph among the vessels of the pia mater; they are found principally along the edge of the great longitudinal fissure of the hemispheres, pushing the arachnoid before them, and even projecting into the sinus. They are generally considered morbid structures, and the result of local irritation of a chronic character; if the products of disease, they do not seem to interfere in the least with the functions of the brain.—The brain of the adult human male, comprising the whole contents of the cranium as far as the occipital foramen, will average in weight about 50 oz.; that of the adult female, about 45 oz.; the maximum weight of the healthy organ is about 64 oz., and the minimum about 31 oz.; in cases of idiocy it has been found weighing only 20 oz. According to Bourguery, if the brain be divided into 204 parts, the cerebral hemispheres would weigh 170, the cerebellum 21, and the medulla and sensory ganglia 13; on the same scale, the spinal cord would weigh 7. In proportion to the body's weight, the brain of man

would weigh $\frac{1}{50}$ part; in the average of mammalia, this proportion would be $\frac{1}{125}$; in birds, $\frac{1}{125}$; in reptiles, $\frac{1}{250}$; and in fishes, $\frac{1}{500}$. In some apes, rodents, and singing birds, the weight of the brain bears a higher proportion to that of the body than it does in man, even as high as $\frac{1}{10}$ in the blue-headed titmouse; the increase, however, is not in the cerebrum, the seat of intellect, but in the sensory ganglia, the seat of the instinctive actions. The size of the brain is not in proportion to the physical development of the body, either in animals or man; the horse has a brain inferior in weight to the smallest adult human brain; that of a whale 75 feet long was found to weigh not quite twice as much as that of man. Even in men there is no fixed relation between the size of the body and the brain; a small man may have a large brain, and *vice versa*. Men of great intellectual power have generally, if not always, possessed large brains; the brain of Cuvier, the great French naturalist, weighed between 59 and 60 oz.; that of the French surgeon, Dupuytren, 58 oz.; those of Napoleon and Daniel Webster, an ounce or two less. The quality of the brain, however, is quite as important as the quantity, so that a large brain does not of necessity constitute a great man. According to Tiedemann, the female brain, though absolutely smaller than that of the male, is larger when compared with the size of the body. The brain reaches its highest development, anatomically, at the age of 20 years, which it maintains until 60, after which, in most persons, it begins to decrease in size, with a corresponding decline in the mental powers. There do not appear to be any striking differences between the brains of the various races of man.—For the topographical and pathological anatomy of the brain, an examination from the hemispheres downward is the most practicable method; but for physiological anatomy, it is more advantageous to make the examination from below upward, by which method the student proceeds from the simple to the more complex, following the direction of the fibres of the medulla oblongata to their ultimate distribution in other parts of the brain. The medulla oblongata is the upper enlarged portion and direct continuation of the spinal cord, extending from the plane of the occipital foramen about an inch upward to the *mesencephalon*, or *pons Varolii*; through this the brain is brought into communication with the other vital organs, and it is therefore the *nexus vitalis*, "the link which binds us to life." As its size is proportionate to that of the nerves which proceed from it, it is much larger in some lower animals than in man. Like the spinal cord, it consists essentially of anterior and posterior columns; it may be anatomically distinguished from the cord by the decussation or crossing of some of the anterior fibres. In front are the "anterior pyramids," separated by a median fissure; external to these are the oval protuberances, the "olivary bodies;" more external, and forming the lateral

and great part of the posterior portions, are the "restiform bodies," separated from each other in the middle by two slender columns, the "posterior pyramids." The anterior pyramids or fibres extend from the antero-lateral columns of the cord to the cerebral hemispheres, passing through the mesocephale, the *corpora striata*, and the *optic thalami*, contributing to form the lower portion of the *crus cerebri*; in the mesocephale these fibres are crossed at right angles by others belonging to it, and are interlaced with them; on tracing them downward, the greater part connect themselves with the middle or lateral columns of the opposite side, while a few are continued down on the same side into the anterior columns of the cord, and others, the "arciform fibres," curve round the olivary bodies and ascend to the cerebellum, not passing to the cord; the anterior pyramids are entirely of a fibrous structure. The arrangement of these fibres is highly interesting in explaining the phenomena of disease of the brain: any lesion will produce it on the opposite side of the body, with few and unimportant exceptions, and this in one hemisphere sufficient to cause paralysis, through the decussating fibres; at the same time the straight fibres will cause a partial affection of the same side; any lesion of the cord below the decussation affects only the same side of the body. The restiform bodies consist of fibrous strands enclosing a gray nucleus, and pass upward into the *crura cerebelli*; below they are chiefly continuous with the posterior spinal columns, and partly with the posterior part of the middle columns; as the fibres ascend they diverge, leaving between them the 4th ventricle, and pass into the corresponding hemisphere of the cerebellum, connecting this latter with the spinal cord; the cerebellar columns also communicate by a band of arciform fibres, according to Solly, with the anterior spinal columns; the gray nucleus, or "restiform ganglion," seems to be the ganglionic centre of the pneumogastric and a part of the glossopharyngeal nerves. The posterior pyramids can hardly be distinguished from the restiform bodies externally; but their columns, bounded by the median fissure and by a very slight groove, establish a connection between the sensory tract of the *crura cerebri* and the posterior lateral columns of the cord, a few fibres passing to the posterior; their gray nuclei are the ganglionic centres of the auditory nerves. The olivary bodies, continuous inferiorly with the anterior or motor columns of the cord, and affording attachments to the motor fibres of the 1st and 2d cervical nerves, enclose a gray nucleus, and send their fibres forward to the motor tract of the *crus cerebri*, and backward to the quadrigeminal bodies; the nucleus, or *corpus dentatum*, seems to be connected with the hypoglossal or motor nerve of the tongue, and also with the glossopharyngeal, one of the sensory nerves of this organ. According to Todd and Bowman, it is highly probable that the olivary bodies constitute the nucleus of the medulla oblongata, that

on which their power as an independent centre depends—they contain the mixture of gray and white matter characteristic of a nervous centre—and that the other pyramids and bodies serve only to connect the cerebrum and cerebellum with the spinal cord. The medulla is not only a transmitter of fibres from the spinal cord, but is a nervous centre itself; with it are connected the nerves of respiration and deglutition, which are quite independent of the cerebral hemispheres, and beyond the control of the will.—The cerebellum, $\frac{1}{4}$ of the size of the cerebrum, is placed under the posterior part of the latter, from which it is separated by the *tentorium*; it is composed of white and gray matter, the former occupying the interior; it has no convolutions, being made up of parallel layers. Its central part or lobe is the only one found in fishes and reptiles; the lateral lobes, found only in the higher animals, and in man, indicate an advance in development. On a vertical section we find the white substance resembling the trunk of a tree from which branches are given off, hence called *arbor vitae*, or tree of life. This organ is connected with the rest of the brain by 8 sets of fibres, the superior extending to the *tubercula quadrigemina*, the middle or the restiform fibres passing downward to the medulla, and the inferior or transverse (post Varolii) passing to the opposite side and forming a considerable part of the mesocephale; the central lobe has aggregates of lobules on its superior surface, containing both white and gray matter, the "superior vermiform processes," and on the lower surface the "inferior vermiform processes." The transverse diameter of the cerebellum is $3\frac{1}{2}$ to 4 inches, the length 2 to $2\frac{1}{2}$ inches, and its thickness varying from 2 inches in front to less than $\frac{1}{2}$ an inch behind. For details on the structure and on the intricate divisions of the cerebellum, the reader is referred to special works mentioned at the end of this article. Disease of the cerebellum, when deep-seated, is generally manifested on the opposite side of the body; this organ presides principally over the regulation of the movements, and partially over the sexual instinct. The restiform bodies of the medulla in their ascent to the hemispheres of the cerebellum diverge, leaving a lozenge-shaped cavity, the 4th ventricle, bounded above by the median cerebellar lobe, below by the olivary columns, behind by the nodule of the inferior vermiform process, in front by a portion of the superior vermiform process, called the "valve of Vieussens;" on the floor are the white barb-like fibres of the 7th pair of nerves, passing at right angles, and called the *calamus scriptorius*; it contains a process of pia mater, and has no direct communication with the subarachnoid space; it is improperly called the ventricle of the cerebellum, as it belongs to the medulla and is proportionate to it in size. The mesocephale, or ruber annulare, embraces those portions of the brain which unite the cerebrum above, the cerebellum behind, and the medulla below; the lower sur-

face, or the pons Varolii, consists of curved transverse fibres, passing from one crus cerebelli to the other, crossing apparently over the anterior pyramids like a bridge; they are always developed in proportion to the cerebellar hemispheres, and are absent in animals having only the median lobe; they constitute the great transverse commissure of the cerebellum, as the *corpus callosum* (mentioned hereafter) constitutes the great transverse commissure of the cerebrum; these fibres extend more than one half of the depth of the mesocephale. The tuber annulare, which exists in animals whose cerebellum has no hemispheres, projects from the medulla proper, and contains a nucleus of gray matter; Longet is of opinion that this ganglion is an independent centre of sensation and motor power, and Dr. Todd states that the convulsions, excited by a current of electro-magnetism through it, are not tetanic, but epileptic, or alternating with relaxation of the muscles. On the superior surface of the mesocephale are the quadrigeminal bodies, the anterior 2 being called *nates*, and the posterior 2 *testes*; they are gangliform bodies, containing gray and white matter, the anterior being the larger; these are the analogues of the optic lobes of birds, reptiles, and fishes, in which classes there is only a single pair, but of much larger size. The crura cerebelli, which apparently emerge from the posterior angles of the mesocephale, derive their fibres from strands going to the testes, from those of the restiform body, and from those of the pons Varolii; from the anterior angles of the mesocephale diverge 2 similar processes of considerable thickness, the crura cerebri, which enter the cerebral hemispheres, and upon which each of these masses has been said by Dr. Todd to rest as a "mushroom upon its stalk." The 4th and 5th pairs of nerves are intimately connected with the mesocephale. On making a section of the crura cerebri, just beyond the mesocephale, 8 planes of nervous matter may be seen; the lower one, of fibrous matter, continuous with the mesocephale and the anterior pyramids, passes up into the corpora striata, or striated bodies; above this is a dark mass, the *locus niger*, containing large caudate vesicles abounding in pigment, with nerve fibres among them; the upper layer, of grayish matter, continuous with the central part of the medulla oblongata, or olivary columns, passes up into the optic thalami. The striated and optic bodies are best seen by laying open the lateral ventricles, in which they are placed, closely united to each other, the former being a little in front and outside of the latter. The former are pear-shaped, tapering gradually backward in a long process which winds down into the anterior extremity of the descending horn of the ventricle, and striated when cut in an oblique direction upward and outward, on account of the passage of the fibres of the crura into the vesicular matter; through these bodies, by 8 sets of fibres, communications are established between the mesocephale, medulla oblongata, and cerebral con-

volution; they are generally considered as the more essential part of the nervous system which controls voluntary movements. The optic thalami are of a lighter color, of the same texture and appearance as the olivary columns, of which they are the continuations; a portion projects into the ventricles, and the rest adheres to the striated bodies, the hemispheres, olivary columns, and quadrigeminal tubercles; the fibres no doubt are continuous with those of the white substance of the hemispheres, and with those of the striated bodies; between them is the 8d ventricle, the roof of which is formed by the velum interpositum, a process of the pia mater. The *corpora geniculata*, *externum* and *internum*, are small gangliform masses, projecting from the posterior part of the optic thalami. Behind the 8d ventricle is a conical, dark gray body, enclosed by a process of the pia mater, the "pineal body;" it rests in a groove between the nates, and is connected to the thalami by fibres, called peduncles; it consists chiefly of large nucleated vesicles, with a few fibres, and, in a cavity near the base, contains a sandy substance composed of phosphate and carbonate of lime; its use in the economy is unknown. The optic thalami have been considered as the principal sensitive centres, without which the sensorium could not perceive the physical change resulting from a sensitive impression; all the nerves of pure sense communicate with them, directly or indirectly.—The cerebral hemispheres constitute the great mass of the brain, and their horizontal section presents an oval, of which the smaller extremity is directed forward; the external surface is smooth on account of the arachnoid membrane; they are divided longitudinally along the middle line by the deep fissure which receives the falx cerebri, and at the bottom of which in the middle portion is the great commissure, the corpus callosum; the inferior surface, or base of the brain, is divided into anterior, middle, and posterior lobes, corresponding to the *fossæ* in the cranial bones; the anterior lobe rests chiefly on the roof of the orbits, and on its inferior surface presents the nerve of smell; between it and the middle lobe is the "fissure of Sylvius," through which runs the middle artery of the brain; the middle lobes are gradually lost in the posterior, which are separated from the cerebellum by the tentorium. The space between the middle lobes in the centre is occupied by the pituitary body, crossing of the optic nerves, and the mammillary bodies; the pituitary body is lodged in the *sella turcica* of the sphenoid bone, and is a glandiform mass, surrounded by the coronary sinus, and connected with the brain by the infundibular process; it has 2 lobes, and somewhat resembles the vesicular substance of the brain; its use is unknown. Between the crura of the cerebrum the 8d pair of nerves emerge. The usual way of examining the hemispheres is to make a horizontal section at about $\frac{1}{4}$ from the summit; this section, denominated the *centrum*

ovale majus, presents a centre of white substance, surrounded by a narrow border of gray, presenting the zigzag outlines of the convolutions, and spotted by numerous small red points caused by the escape of blood from the cut ends of minute vessels. In the central line is a broad band of white substance, uniting the hemispheres together as their great commissure, and securing their connected action, the fibres passing from one to the other as over a bridge; at its anterior and posterior extremity it is folded downward toward the base of the brain. On cutting a little deeper, an irregular cavity is opened on each side, the lateral ventricle, containing the striated and optic bodies; they are quite extensive, and are lined by a serous membrane, secreting a fluid, the undue accumulation of which constitutes *hydrocephalus internus*, or water on the brain, a fatal disease of children, in which the substance of the brain may become almost obliterated, and the bones of the yet ununited skull distended almost to the size of an adult head. The 5th ventricle is the space between the layers of the *septum lucidum*, an extension of fibrous matter connecting the anterior reflection of the corpus callosum with the horizontal fibrous stratum called the *fornix*, and separating the anterior horns of the lateral ventricles. Between the optic and striated bodies in the ventricles, in a superficial groove, is the *tonia semicircularia*, a delicate band of fibrous matter, commissural in its character. The posterior horn of the lateral ventricle, according to Owen, is peculiar to man, as also is the *hippocampus minor*, a projection of one of the convolutions into it; in its inferior horn is the *hippocampus major*, and a considerable portion of the vascular choroid plexus. The cerebral hemispheres, after the membranes have been removed, present a peculiar folded arrangement of their surface, the "convolutions;" these consist of gray matter, varying from $\frac{1}{2}$ to $\frac{1}{4}$ of an inch in depth, even in the same individual. Physiology has shown that the gray matter of the nervous centres is the originator of nervous force, while the white matter serves only to convey impressions to or from the different parts of the body; hence the greater the number of these convolutions, or, in other words, the greater the amount of the gray substance, the greater will be the physiological power of the brain. In the rat and the mole the surface of the brain is quite smooth; from these the convolutions increase in number up to man. Their arrangement, though never the same in 2 brains, nor on opposite sides of the same brain, cannot be supposed to be purely accidental; there are certain ones always present (when any exist), whose situation and size influence the disposition of the others; in man, the variable and additional convolutions are chiefly on the top and front of the hemispheres. The lower the position of an animal in the scale, and the less developed the organ as we approach infancy, the greater is the symmetry of the 2 sides. It is said that the convo-

lutions in the inferior races of man (Todd and Bowman) present a more symmetrical arrangement than is usually found in the more cultivated races. If the gray matter of the cerebral convolutions and the cerebellar layers were spread out, it would occupy about 670 square inches, which, by this admirable arrangement, are packed into the small extent of the brain. Each convolution consists of a fold of gray matter enclosing a process of the white; the gray matter forms a continuous unbroken sheet over the cerebral surface; the greater part of the white fibres penetrate the gray matter, and thence converge to the centre of the brain and the optic and striated bodies. The fibres which unite portions of the same or of opposite hemispheres are called "commissures;" the transverse are the corpus callosum, the anterior, posterior, and soft commissures; the longitudinal are the fornix and the superior longitudinal commissure. The corpus callosum connects the great bulk of the hemispheres, especially at the lower part; it is wanting in fishes, reptiles, birds, and the lower mammals. The anterior commissure particularly unites the striated bodies, many of its fibres passing through them and radiating to the middle cerebral lobes; it is very large in the marsupials, which have no corpus callosum. The posterior commissure connects the optic thalami, and is connected with the pineal body. The soft commissure also passes from one optic thalamus to the other, dividing the 3d ventricle into an upper and lower portion; unlike the other commissures, it contains gray matter. The superior longitudinal commissure is enclosed in the convolution overhanging the corpus callosum, and connects the anterior and middle lobes with the posterior. The fornix or vault is the most remarkable, extensive, and complicated of all the commissures; it is situated immediately under the corpus callosum, with which it is closely connected posteriorly; it may be divided along the median line into 2 portions, one belonging to each hemisphere. Of this complicated structure it can only be said here that it begins at the optic thalamus, proceeding anteriorly to the base of the brain, where it turns suddenly upward and forward, thus forming the *corpora albicantia* or *mammillaria*, and, ascending toward the corpus callosum, passes along its lower surface, spreading laterally into what is called its "body;" it again descends at the back part of the brain, some of its fibres going to the posterior lobes, and others crossing the hippocampi to be connected with the middle lobes; it thus connects those parts of the convolutions of one side beneath the corpus callosum. Other probably commissural structures are the *pons Varini*, in the angle formed by the divergence of the crura cerebri, and probably connecting these fibres; the innermost fibres of the optic tracts are evidently commissural, connecting the quadrigeminal and geniculate bodies of opposite sides; the *tuber cinereum* is a layer

of gray matter, containing many nerve tubes, extending from the mammillary bodies to the posterior curve of the corpus callosum, and forming intimate connections with the fornix, optic tracts and thalami, and the pituitary body. The fibres connecting the cerebrum with the cerebellum are very few; the principal, if not the only ones, are those going to the testes from the cerebellum.—An organ of such importance as the brain must require a large supply of blood; this is afforded by the great carotid arteries, coming directly from the aorta, and the vertebral branches of the subclavians, which meet at the base of the organ, freely communicating with each other. These arteries, coming so directly from the aortic arch, are prevented from injuring the delicate brain: 1, by the blood ascending against gravity; 2, by the curving of the vessels like the letter S before they enter the cranium, thus scattering the force of the stream in different directions; 3, by the minute subdivision of the vessels before they enter the cerebral substance. The impure blood returns through the jugular veins; hence any compression of these vessels by tight neck-stocks, or the like, impedes the whole cerebral circulation, causing, it may be, dangerous congestions. If the blood could be shut off completely from the brain, death would ensue instantly, and, to prevent the possibility of this accident, the vertebral arteries are protected by the bony canals of the cervical transverse vertebral processes from all danger of compression or ordinary injuries. The brains of persons who have died by hanging always exhibit great venous congestion. The veins of the dura mater are quite remarkable by pouring their contents into the large canals enclosed between its layers, the sinuses; these, unlike ordinary veins, cannot be distended beyond a certain point, and, as they all empty their blood into the internal jugular vein, any obstruction in this or in the superior vena cava very speedily produces an uncomfortable distention in the head. These sinuses are the superior longitudinal, corresponding to the superior margin of the falx cerebri, commencing near the root of the nose (*crista galli*) and terminating in the cavity called *torcular Herophili* near the internal occipital protuberance; the inferior longitudinal sinus runs along the lower border of the falx, and ends in the straight sinus, which runs in the median line at the meeting of the falx and the tentorium, and opens into the torcular; the lateral sinuses extend from the torcular downward and forward to the jugular veins. This is the largest sinus, and its canal is deeply hollowed out of the occipital and temporal bones; that of the right side is generally the larger, due, according to some eminent anatomists, to the fact that most persons sleep most on the right side; they are frequently the seats of dangerous inflammation. Between the layers of the falx cerebelli are the occipital sinuses, opening into the torcular; the petrosal sinuses, running along the petrous portion of

the temporal bone, open into the lateral sinuses; the cavernous sinuses are on each side of the sella turcica, communicating with the petrosal by the transverse sinus, and with each other by the circular sinus. From this arrangement of the sinuses, communicating freely with the external vessels, may be understood the signal advantages of local depletion in relieving vascular fulness within the head; and also the utility of cold applications for similar purposes.—There are 12 pairs of nerves belonging strictly to the brain, which differ from spinal nerves only in their distribution and in coming through openings in the skull instead of between the vertebrae; all, except the first, proceed from the spinal cord itself, or from its prolongation in the brain (the medulla oblongata). These nerves are: 1, the olfactory, or nerve of smell; 2, the optic, or nerve of vision; 3, *motores oculorum*, the motor nerves of all the muscles of the orbit, except of the superior oblique, which are supplied by 4, the *pathetici*, and of the external recti, which are moved by 5, the *abducentes oculorum*; 6, the trifacial or *trigeminus*, the general sensory nerve of the head and face; 7, the facial, the motor nerve of the head and face; 8, the auditory, or nerve of hearing; 9, the glossopharyngeal, supplying part of the sensory fibres of the tongue, and presiding over the movements of swallowing and of the entrance of air into the larynx; 10, the pneumogastric, or *par vagum*; 11, the spinal accessory, preside over the movements of the lungs and stomach, and inform the system when there is a demand for air and food; and 12, the hypoglossal, the motor nerve of the tongue. Philosophical anatomists have combined these nerves in various ways, separating the 3 nerves of special sense, and classing the others into groups resembling spinal nerves, with their anterior motor, and their posterior sensitive roots. As the skull may be considered as composed of 8 cranial vertebrae, we have the olfactory, optic, and auditory, special nerves, making their way out through the 8 vertebrae which may be called by the same name, corresponding to the 8 primary vesicles which are developed into the brain. Of the intervertebral, analogous to spinal nerves, are the 1st, composed of the 5th for its sensory portion, and of the 3d, 4th, and 6th, for its motor portion; 2d, the facial and glossopharyngeal combined; and lastly, the par vagum and spinal accessory form the 8d pair; the hypoglossal may be considered as the first of the true spinal nerves. For further details on this subject the reader is referred to the works of Cuvier, Oken, Owen, and other writers on philosophical anatomy. The nature of the nervous force, the functions of the nerves, and the general physiology and pathology of the subject, will be treated, as far as possible in a work of this character, under the heads of NERVOUS SYSTEM and SPINAL CORD; only a brief summary can be given in this article. Without question the various operations of the mind are associated with the cerebral convolutions;

perception, memory, the power of abstraction, imagination, &c., possess, as instruments of action, these folds of gray matter; as *Ouvier* says, these parts are the sole receptacles in which the various sensations may be as it were consumed, and become perceptible to the animal. Mechanical injury to the convolutions and the central white substance occasions no pain nor disturbance of the motive powers; in many diseases of the brain and its membranes convulsions accompanied by pain occur, but this depends on a change produced in the striated and optic bodies, and through them propagated to the motor and sensitive nerves. On removing the hemispheres animals are thrown into a state of deep sleep, retaining their muscular power, yet apparently incapable of a single mental nervous action, voluntary or sensory. When the membranes are inflamed, especially the pia mater, the mental faculties are always disturbed; in the delirium of fevers, in delirium tremens, &c., the circulation of the convolutions seems to be out of order. The convolutions, then, are the centre of the intellectual actions; being connected with the striated and optic bodies (which have been regarded as the centres of volition and sensation), the intellectual centre may either excite or be excited by them. When the convulsions are insufficiently supplied with blood, the deficient nutrition occasions deranged phenomena of thought and a rapid development of ideas, which, being ill or not at all regulated by the will, assume the forms of delirium and insanity, just as diseases of the nerves of vision and hearing may produce unnatural sights and sounds. As in every muscular action some portion of the muscular tissue is wasted, to be supplied by the general nutrition of the body, so every thought is accompanied by some change in the nervous centre. Concussion of the brain from a fall or blow, or condensation of its substance by a clot of blood, checks the organic changes of the surface, and interrupts the joint actions necessary for consciousness. *Gall*, the founder of phrenology, assigned to certain convulsions certain faculties of the mind, moral feelings, and instinctive propensities. This theory has since his time been pursued with the zeal which must naturally attach itself to any science which professes to read the mental tendencies from external signs. In regard to phrenology, it can only be remarked here that, while it is undoubtedly true that the energy of a nervous centre bears a certain relation to its size, the stress laid by its followers on the temperaments shows that they consider the quality of the brain an important element in the development of nervous power.—During sleep the nervous centres obtain the rest necessary to repair the waste of daily activity; in this state the brain refuses or is slow to convey impressions from without. In deep sleep we are unconscious, and may be motionless; as the sleep becomes lighter, consciousness begins to return, and mental changes take place, constituting dreams of various kinds. Man performs many actions

instinctively, without the intentional adaptation of means to ends, just as the bee makes its cell, or the bird its nest; children are born and live for some time without cerebral hemispheres, who perform the acts of sucking and swallowing perfectly well; remove the hemispheres in an animal, it will eat if food be placed in the mouth, though it will not go to seek it; many idiots will do the same. In what part of the brain resides the power presiding over these actions? At the base of the brain, concealed by the hemispheres, is a series of ganglia, the origin of the nerves of special sense, and the striated and optic bodies into which all the fibres connecting the hemispheres with the medulla oblongata pass; they have also their own nervous centres, distinct in function from other parts of the brain; in fishes these ganglia are very large, and the hemispheres comparatively small, sometimes smaller than a single pair, the optic; in man the instinctive propensities are in a measure superseded by intelligence, but they may act independently of it. The real nervous centres for motions and sensations derived from the organs of special sense are these ganglia, and not the hemispheres; as far as mere animal life and motion are concerned, the latter are not essential; a vast proportion of animated creatures (all the invertebrates) have no trace of them; they are added in man for the intellectual and moral nature. The instinctive and emotional actions are excited through the ganglia of special senses, following directly upon sensation, without any process of thought; they are sometimes stronger than the voluntary: e. g., we are often compelled to laugh at something ludicrous, though we have the strongest motives not to do so; long-continued habit will often make us perform actions instinctively, as it were, which at first required an effort of the will: for instance, in an old snuff-taker, who had been seized with epilepsy, irritation of the nose with a feather to restore consciousness produced a contraction of the right fore-finger and thumb to take a pinch. These emotional actions may be excited by mental operations. Whenever the feelings get the better of the reason, the sensory ganglia are excited at the expense of the hemispheres, and the individual is, for the time being, morally insane, even though these emotions may point in the right direction; fanatics of all classes, in this way, are really insane, generally monomaniacs. These instincts may also be in opposition to the reason, and then the more a man follows them the closer does he approach the brute. Comparative anatomy teaches that the cerebellum is largest in those animals which have the greatest variety of motions; injury or removal of this organ causes no pain nor convulsions, but destroys the power of combining the actions of the muscles. Man, though inferior to many animals in particular kinds of movements, far surpasses them in the number and complexity of their combinations; the act of walking brings into action almost every muscle of the trunk and ex-

tremities, and is superior to all other modes of exercise; in man the cerebellum attains its highest development. Inflammation of its membranes, and even its almost complete destruction by slow disease, has little effect on the intelligence, but the motive powers are constantly disturbed; it is quite probable that the central portion may regulate the sexual instinct, while the lateral lobes preside over the regulation of the movements. When we see a man staggering along in a state of intoxication, we perceive that the enemy first steals away the energy of the cerebellum, and afterward takes the intelligence and consciousness, leaving him for the time little better than dead, motionless, and insensible. The distinct operation of these various centres is made obvious by many conditions of the body, in which one or more are inactive. In deep sleep, the hemispheres, the sensory ganglia, and the cerebellum are at rest, more or less complete, but the medulla oblongata and the spinal cord must, as always, be wide awake; in dreaming, the hemispheres are partially active; in somnambulism, a step nearer to wakefulness, the hemispheres are awake, and also the cerebellum, so that the movements are well adapted to the thoughts. It is well known that in this state persons have walked over dangerous places, which they could never have done in open day; there is an evident loss of control over the thoughts, which are more influenced by external impressions than in dreaming, so that the somnambulist may answer questions properly; that there is not full command over the senses, the dangerous accidents occurring in this condition fully prove; the events of this state may not be remembered in the waking hours, but may be taken up again by the memory the next night, constituting complete "double consciousness." A condition remarkably analogous to somnambulism is the mesmeric sleep or trance; a nervous habit of body predisposes to both. (See ANIMAL MAGNETISM.) What is this mysterious agent which we call nervous force, without which the human body is only a beautifully made, mechanically perfect, but motionless and useless machine? We know it only by its effects, as we know light, heat, and electricity; it resembles the latter in the instantaneousness of its action and in some other points, but its passage is arrested by a ligature, while the electric current is not. The torpedo and electric eel possess a powerful electric apparatus, which depends for its energy on the nervous system; the glow-worm generates light in a particular organ, whose power is also regulated by the nervous system. The analogy of these mysterious powers seems to indicate that light, electricity, and nervous power, are modifications of the same original force, presenting different phenomena, according to the offices each is destined to perform in the great work of the universe. Overworking the brain exhausts the body; wear and tear of the brain, like wear and tear of the muscles, require periodic and long intervals of

rest; from want of attention to this fact, many a bright intellect has faded into imbecility and insanity. The baneful effects of our forcing system of education, of our fast way of doing every thing, of our too intense cerebral activity in the universal competition for the prizes of life, are seen in every hospital and prison and asylum in the land, and in the general emaciation and cadaverous appearance of the American people.—The primary ganglia of the vertebrate brain are 8 in number, and they are developed into the anterior cerebrum, the posterior cerebellum, and the median quadrigeminal bodies. In fishes, the lowest vertebrates, the medulla is large, with the pyramidal and restiform bodies, but without the olivary; the brain looks like a series of ganglia developed on the superior surface of the cord, 2 pairs and a single one: 1, the olfactory lobes, analogous to the hemispheres in man, from which the nerves of smell arise; 2, behind these the optic lobes, generally considered analogous to the tubercula quadrigemina, in some fishes larger than the other parts of the brain; from these arise the optic nerves, and the 3d, 4th, and 6th pairs; 3, behind these the imperfectly developed cerebellum generally, but of large size in the selachians. In reptiles the brain well fills the cranial cavity, and the preponderance of the spinal cord is less; the olfactory lobes, now obviously the hemispheres, are increased in size, with an internal cavity, and a commissure; the 2d cerebral mass and its cavities are smaller; the cerebellum is small in the lower orders, but with lateral appendages and external striæ in the higher. In birds the brain and spinal cord are no longer on the same plane; the brain is the larger, and the ganglia are more above and less behind each other; the hemispheres are larger than the other parts, are united by commissures, and contain true lateral ventricles in which is a tubercle resembling a corpus striatum; the optic lobes are small, separated, with smaller cavities; the cerebellum is particularly large, with evident lateral lobes and external striæ. In mammals the brain is much larger than the cord; the cerebral hemispheres are of large size, with marked convolutions in the higher orders, with a corpus callosum, lateral ventricles with anterior, descending, and (in the monkey) posterior horns, optic and striated bodies, tænia semicircularis, and fornix; the optic lobes are small, reduced to 2 pairs, solid, and are now called the tubercula quadrigemina; the cerebellum is highly developed, the more so as the animal approaches man, presenting the arbor vitæ in its interior; the pons Varolii is large, and the 4th ventricle is completely concealed and shut in. Prof. Owen (in the "Proceedings of the Linnæan Society," 1857) has divided the mammalia into 4 groups, according to the characters of the surfaces of the cerebral hemispheres; in some the hemispheres are but feebly connected by the fornix and anterior commissure, in the great majority the corpus callosum is added; in the former there is a peculiar mode of development of the young from

the non-development of the placenta: 1, *lyncephala*, having the hemispheres loose and disconnected, leaving exposed the olfactory ganglia, cerebellum, and more or less of the optic lobes; their surface smooth, or with very few anfractuositities; this includes the marsupials; 2, *lissencephala*, having a corpus callosum, with the cerebellum and olfactory lobes exposed, the surface smooth, or with very few and simple convolutions; this includes the rodents, *insectivora*, *chiroptera*, and *edentata*; 3, *gyrencephala*, having the cerebrum extending over more or less of the cerebellum and of the olfactory lobes, with more or less numerous convolutions; this includes *cetacea*, *pachydermata*, *herbivora*, *carnivora*, and *quadrumania*; 4, *archencephala*, embracing man only.—Those wishing to pursue the study of the brain, are referred to the works of Solly, Longet, Leuret, Todd and Bowman, Carpenter, Owen, Tiedemann, Müller, and to the article "Nervous System," in the "Cyclopædia of Anatomy and Physiology."

BRAIN FEVER is the result of inflammatory action in the brain, and may be caused by various kinds of morbid stimulation, such as long exposure to excessive heat or cold, fright, mental anxiety, the inordinate use of ardent spirits, external injury &c. It sometimes occurs as consequent on small-pox, scarlatina, erysipelas of the face and scalp, bilious remittent fever, rheumatism, &c. The brain fever of drunkards, or delirium tremens, is variously modified, according to the causes in which it originates and the habits and constitution of the patient. Two species are recognized: the one being connected with inflammatory irritation or excited vascular action in the meninges, or enveloping membranes of the brain, associated with great irritation; the other consisting of great cerebral irritation, with exhausted nervous energy. The one occurs usually after a protracted debauch; the other from a sudden and complete suspension of the stimulus in more habitual drinkers. The phenomena of this disease vary considerably in degrees of intensity. In some cases we find the slightest forms of nervous tremor, with spectral illusions and a quickened pulse; while in others of a more severe character, we find the most alarming state of vital depression, muscular agitation, and mental alienation. In ordinary cases it is characterized by constant watchfulness and a tremulous quivering motion in the lips, hands, and muscles generally, on making any effort. The pulse, which at first is slow, becomes quick, and there is a constant disposition to talk in a rambling manner, passing quickly from one subject to another. In the first species, the pulse is full and hard, the skin dry, the eyes injected, the delirium furious, the head is very hot, and the tongue is often dry and red at the edges. In the second form, which is more common, the pulse is small or soft, and ranges between 100 and 120; the face is not flushed, nor is the skin hot, but it is covered with a clammy perspiration. As the

disease advances, the mental delusion becomes constant, being generally of a low melancholic kind, with reference to the patient's ruling passions and occupations, and anxiety respecting them. He is haunted by spectral illusions or occupied with the most extravagant ideas. If a favorable change do not occur at this period, the skin becomes more cold and clammy, exhaling a peculiar smell, which is something between a vinous and an alliaceous odor. The pulse becomes more frequent, thready, small, and weak; the general tremor increases; the patient talks incessantly, with great rapidity; the delirium increases; and the patient either sinks into a calm, which precedes death, or expires in a convulsive effort.—In the first form of this disease, in which there is increased vascular action, cupping below the occiput at the back of the neck, and leeches behind the ears, are often practised; but cold lotions or affusions to the head when the temperature is increased, and sponging the body with tepid water, are deemed sufficient in many cases to allay inflammatory symptoms. When the affection has been caused by an abuse of ardent spirits, the subsidence of the inflammatory stage must be carefully watched, and the depression which ensues anticipated by a gently stimulating or sustaining treatment. Tincture of hops or of lupulin combined with valerian or asafoetida is usually given. Moderate doses of opium or of laudanum are also given, with a view to lessening nervous irritability and inducing sleep. Tartar emetic is sometimes given with opium to quiet both the nervous and the vascular excitement. In the second form of brain fever, or true delirium tremens, opium is given with full doses of camphor and ammonia; and enemata containing laudanum and asafoetida may be administered. Gentle stimulants and aperients are given. In some cases, warm negus or weak punch may be allowed, in small quantities, repeated as occasion may require. The main indication is to obtain sleep and mental rest. Stimulating liniments applied over the epigastrium are occasionally very efficacious. The functions of the liver and digestive organs require due attention. Time and rest are very necessary, with the absence of all mental and emotional excitement. No food but that which is most easily digested should be taken. All kinds of flesh are difficult to digest when the liver is very much affected, as it is in all such cases; and therefore beef tea and soups, combined with farinaceous diet, should be given in lieu of fleshy substance. Little or no medicine should be given when the inflammatory symptoms have subsided. Change of air, pleasant change of scenery, light nutritious diet, much rest and sleep, with no excitement of any kind, are the only slow and sure means of gradual recovery. Endeavoring to cure rapidly is injudicious, and unsuccessful. There is no royal road to restoration in such cases. Artificial rest, too frequently obtained by narcotics, is also dangerous and often fatal.

Prudence, time, and patience are the sovereign remedies.

BRAINARD, JOHN G. O., an American poet, born at New London, Conn., Oct. 21, 1796, died Sept. 26, 1828. He graduated at Yale college, and began the study of law, but soon abandoned it to become editor of the "Connecticut Mirror," at Hartford. Instead of making his paper a vehicle for political controversy merely, he illuminated it with poetical contributions, choosing the ballad as the usual form of his compositions. In 1827 he was obliged, by the inroads of consumption, to remove to the east end of Long island for the benefit of the sea breezes, whence he returned to die at his father's house in New London. A volume of his poems was published in New York in 1825, and after his death, an enlarged edition appeared in 1832, with the title of "Literary Remains." A third edition was published in 1842 at Hartford.

BRAINERD, the first missionary station established among the Cherokee Indians by the American board of commissioners for foreign missions. It was opened in Jan. 1817, on Chickamunga creek, in Tennessee, near the Georgia frontier, and was known at first as the Chickamunga mission, a name afterward exchanged for that of Brainerd in honor of the celebrated American missionary. Schools for both sexes were soon established, dwelling houses and other buildings were erected, and the missionaries devoted themselves with great zeal to the temporal as well as spiritual improvement of the Indians, until the latter were removed west of the Mississippi in 1838.

BRAINERD, DAVID, a missionary to the Indians, born at Haddam, Conn., April 20, 1718, died at Northampton, Mass., Oct. 9, 1747. Early impressible by religious influences, he felt himself suddenly converted while taking a walk, July 12, 1739, and the same year entered Yale college to prepare himself for the ministry. Instead of graduating in the regular course, he was expelled from the institution in 1742, for having said, in his zeal, of one of the tutors, that he had no more of the grace of God than a chair. He was, however, licensed in July as a preacher, and received an appointment from the society for the propagation of Christian knowledge, as missionary among the Indians near Stockbridge, Mass. He was ordained in 1744, and took up his work among the Indians at the forks of the Delaware in Pennsylvania, making 2 visits to the Indians of the Susquehanna. He met, however, with but little success, until, after a year, he went to reside among those at Crosswicksung near Newark, N. J. Here he is said to have produced a great change among the savages, and to have baptized 78, of whom 88 were adults. Having worn out his health by his labors, he set out on a journey to Boston in the spring of 1747, and thence to Northampton, where he died after a short stay in the family of President Edwards, by whom his biography was soon afterward written. A new edition of this work, together with his journals, *Mira-*

bilis Dei apud Indicos, and "Grace Displayed," was published in 1822.

BRAISE, a term in common use with charcoal burners to designate the fine refuse coal which gathers about their pits. It is a French word of the same signification. The material is much used as a covering for the heaps of wood to be charred; and about iron works it serves a very useful purpose, when mixed with the great piles of ore to be calcined, keeping up for a long time the slow combustion required for this process.

BRAKE, or **BREAK**, is an instrument for retarding or arresting by friction the motion of wheels. When applied to a hoisting reel it consists of a flexible band of iron bent around a wheel; one end of the band is made fast to the frame of the reel, the other end is attached to the small arm of a lever, the whole being so arranged that a slight pull on a rope attached to the long arm of the lever tightens the iron band on the rim of the wheel, which is arrested by the consequent friction. A carriage brake in its primitive form consists of a beam placed crosswise under the frame of the vehicle, and supporting 2 curved blocks of wood, one at each end, which are firmly pressed against the periphery of the wheels. The brake was formerly an instrument of little importance, and prior to 1835 only one patent for a brake was granted in the United States. Since that time the adoption of high speed, consequent upon the invention of the railroad and the locomotive, has made the subject prominent, and several new brakes are patented every year. Some are only improvements on the old plan by changing the position of the friction blocks, or using 2 for each wheel, so as to avoid friction on the journals. Others are mechanical devices to enable one brakeman to operate at once the brakes of several cars. But the most important class by far are called "steam car-brakes;" their object is to produce the friction by steam power instead of man power, and thus enable the engineer to apply the brakes, by the turning of a cock, much more powerfully and in a much shorter time than could be done by any number of brakemen. Conclusive experiments have been made by railroad engineers in this and other countries, showing that the general adoption of steam brakes would render railroad travelling much more secure. These brakes are made, in general, by attaching each friction block to the rod of a piston playing in a short steam cylinder fastened to the frame of the car near the wheel. All these cylinders are connected with the boiler by flexible pipes running all the length of the train, and by letting in more or less steam, the engineer may stop the train more or less suddenly. Other plans, widely different from the original brake, have been suggested; in some the brake is applied to the rail, in others compressed air, and sometimes electricity is the moving power; but as yet these projects have not been produced in a practical shape.

BRAKENBURG, REONER, a Dutch painter, born at Haarlem in 1649, selected his subjects frequently from low life, which he illustrated with great truthfulness and humor. His pictures are numerous in France and the Low Countries.

BRAMAH, JOSEPH, an English engineer, born at Stainborough, in Yorkshire, April, 1749, died Dec. 1814. He showed at an early age a remarkable mechanical ingenuity, was apprenticed to a carpenter, and afterward worked for a cabinet-maker. In 1784 he took out a patent for his widely renowned locks. Among many other inventions, he devised the hydraulic press, which is used not only in the ordinary mode of a press, but also for lifting enormous weights. He was the inventor of a mode of printing the number and date of bank notes used in the bank of England. Mr. Bramah left no writings except the specifications for his numerous valuable patents, and some manuscript essays on religious subjects. His religion, like his science, showed itself chiefly by active and energetic labors for the public good, and especially for the benefit of his numerous workmen.

BRAMAH'S LOCK, patented in England in 1784. This lock, after being the only safe one for years, is still considered one of the best. The principle on which it is based will be understood by imagining a bar or bolt capable of a longitudinal motion, in which are cut several transverse notches reaching half way through, and supposing in each notch another bar placed crosswise to the first. These smaller bars are themselves cut in such a manner as to allow the long bar to move lengthwise when their cuts are brought over it. All these transverse bars or sliders are pushed on one side by springs. To move the bolt, the first operation is to push the sliders against the springs, so as to bring all their notches in line over the bolt; this is done by pressing against their ends a block on which steps of the proper depth are cut, one for each slide. This arrangement, disposed in a circular form around a small barrel, which is made to rotate by a small projection on the side of the key, and which itself pushes the bolt forward, constitutes Bramah's lock. The end of the key is made hollow to fit on a short pin fixed in the lock, and the hollow cylinder thus formed is cut with 4 slits of various depths, the function of which is to push the sliders the proper distance for allowing the barrel to turn. This lock was first picked by pressing the barrel as if to open the lock till it is arrested by the slider that fits best, then carefully moving this slider till it jerks in its notch, and so on with every slider in succession. This defect in the lock was corrected by Russell, one of the workmen in Bramah's shop, who devised the plan of cutting false notches of a depth sufficient to produce the jerk mentioned, but too shallow to let the barrel turn. The other peculiarities of Bramah's lock are of a technical character, and foreign to the patented principle.

BRAMAH'S PRESS was patented in England in the year 1796. This instrument, also called hydraulic press, is the most powerful and most simple of all presses. Its invention required no mechanical ingenuity, but genius; as it is a very easy application of principles of hydrostatics which seem at first sight to have very little to do with the lifting of weights, viz.: fluids exert an equal pressure in all directions, and water is incompressible. A hydraulic press consists of a large heavy cylinder, open at one end, in which a solid piston is free to move, and of a force pump, to force water into the large cylinder. According to theory, the pressure of the water on both pistons is proportional to their surfaces; consequently, by using a force pump sufficiently small, or a cylinder sufficiently large, any amount of pressure may be produced with a given force. The large piston is generally provided with a platen to press substances against another platen, or into a box fastened to the frame of the machine. Bramah's press is used by printers for smoothing printed sheets; in dyeing bandannas, in order to prevent the bleaching liquor from destroying the color of the pattern; to separate oils or other fluids from solid substances; for packing, &c. It is used at several of the New York dry docks to lift ships out of the water. The Bramah press has been lately built in the form of a lifting-jack by Dudgeon of New York, and a patent has been granted to him for an ingenious device which enables the operator to bring the lifted carriage down, simply by lowering the lever handle beyond a certain point.

BRAMANTE D'URBINO, whose real name was **DONATO LAZZARI**, an Italian architect and the uncle of Raphael, born at Monte Astrualdo, near Fumignano, in 1444, died in Rome, in 1514. At an early age, he was placed as pupil with Fra Bartolommeo, and several of his pictures are still preserved at Milan. On his way to Rome, he was struck with the beauty and skilful construction of the celebrated duomo of Milan, then in progress. At Rome, he executed a few frescoes, but his taste was wholly for architecture, and his study of the antiquities of the city confirmed this bias. His erection of the cloister of the convent of Della Pace, obtained him the patronage of Pope Alexander VI., for whom he executed the Cancelleria, a pile of vast size with a *cortile* surrounded by open galleries formed by ranges of arches resting on granite columns. Julius II. afterward employed Bramante to draw plans for the Belvedere. The influence which the architect obtained was employed in recommending Raphael at the papal court; he has been charged with being insensible or hostile to the merits of Michel Angelo, and certainly persuaded the pope not to adopt the project of a vast mausoleum ornamented with numerous statues which that artist had suggested. The pope had determined to take down the old basilica of St. Peter and erect a new edifice; one of his predecessors, Nicholas V., had even commenced the end tribune or

semicircle, which Michel Angelo purposed adopting as the best place for the mausoleum. Instead of this, Bramante undertook to erect a new edifice, and, in 1518, designed and commenced the church of St. Peter's, which was completed by Michel Angelo.

BRAMBANAN, a small native town of Java, in the sultanate of Yugyakerta, and about 10 miles distant from the capital of this state. The name signifies "abode of Brahma;" and in its immediate vicinity are the remains of several magnificent temples, which evidently were devoted to the worship of the chief deity of the Hindoo triad. There are eight structures in such a state of preservation that every portion of their architecture and decoration can be accurately made out. Sir Stamford Raffles, in his history of Java, gives a full account of these edifices, and fine illustrations of them, in a restored condition, are to be found in the plates accompanying the London edition of 1880 of this work.

BRAMBLE, the wild bush that bears raspberries and blackberries, belonging to the natural order *rosacea*, and constituting the genus *rubus*. The essential characters of the genus are: calyx 5-parted, without bractlets; petals 5, deciduous; achenia usually many, collected on a spongy or succulent receptacle, becoming small drupes. Nearly 200 species of this genus have been described. They are perennial herbs, or somewhat shrubby plants, with white (rarely reddish) flowers, and edible fruit; and they are universally diffused over the mountainous and temperate regions of the old and new world. Among the European species are the *R. fruticosus*, or common blackberry, having digitate leaves, with from 3 to 5 leaflets, white panicle flowers, and black or purple fruit, common throughout Europe in hedges and thickets; the *R. coccineus*, or dewberry, a rougher and more prickly species than the preceding, with trailing stem, found in Europe and in N. E. Asia; the *R. arcticus*, a dwarf species, found in mountainous and northern regions, each stem producing a single highly esteemed fruit; and the *R. idaeus*, or common raspberry, having minute leaves, with from 3 to 7 leaflets, villose, with upright and bristly stems, drooping flowers, and a light-red finely flavored fruit, common from the Himalayas to Ireland. Among the American species are the *R. strigosus*, or wild raspberry, closely resembling the last, but having longer petals, common on thickets and hills, especially throughout the northern states; the *R. occidentalis*, black raspberry, or thimbleberry, glaucous, with recurved stems, armed with hooked prickles, with umbellate flowers and a purple-black fruit, found in thickets and fields from Canada to the West Indies; the *R. odoratus*, a sweet-scented raspberry, with fragrant foliage, large purple flowers, and a shrubby stem, found on rocky banks northward from the Alleghanies; the *R. villosus*, or high blackberry, shrubby, armed with stout prickles,

having 3 or 5 ovate, unequally serrate leaflets, numerous racemed flowers, and a blackish fruit, common in the borders of thickets, and varying much in size and aspect; the *R. Canadensis*, low blackberry, or dewberry, shrubby, trailing, prickly, common on rocky or gravelly hills, and having a large and sweet fruit; and the *R. trivialis*, or low bush-blackberry, with evergreen, nearly glabrous, ovate-oblong or lanceolate leaves, and large petals, growing chiefly in sandy soil southward.

BRAMHALL, JOHN, archbishop of Armagh, Ireland, born 1593, died 1663. He was instrumental in restoring the temporalities, and also in inducing the church of Ireland to embrace the 39 articles. In 1640-'41 he was impeached, together with several of Lord Stafford's coadjutors, by the Irish house of commons. After the battle of Long Marston Moor, he retired to Hamburg. In the field of literature, Bramhall is known by the controversy which he maintained with Hobbes, "concerning liberty, necessity, and chance."

BRAN, the husks which separate from grain when ground and bolted. Its proportion in good wheat, according to Johnston, is from 14 to 16 per cent. of the whole weight. As bran contains a large amount of albuminous matter, its rejection from the flour is regarded by chemists as a loss of nutriment. Liebig, Dr. Thomson, Millon, and other distinguished chemists, all regard its separation as rather injurious than otherwise. Its composition, as determined from 6 samples analyzed by Johnston, is:

Water.....	13.1
Albumen, coagulated.....	19.3
Oil.....	4.7
Husk and a little starch.....	53.6
Saline matter (ash).....	7.3
	100.0

Payen found that the gluten in the grain increased in quantity from its centre toward the outer covering, thus showing that the removal of the husk must abstract a part of the most nutritious portion of the grain. From the tendency of bran to ferment, it has the effect of aiding digestion, which may perhaps be increased by the mechanical operation of the coarse particles which it contains. Bread made of unbolted flour is often used as a laxative article of diet in dyspepsia. In France and Germany it is the common food of the peasantry, and among no people are complaints of indigestion more rare. In the use of it, it is apparent also that there is great economy. It has been found by experiment that dogs can live on bran-bread, though they cannot on flour-bread. This is owing to the nitrogenous qualities of the bran, which are absent from the flour.—Wheat bran is employed in the manufacture of starch, and by calico printers for removing the non-mordanted colors from maddered goods. This is done by boiling them in bran water. Dyers also make use of it in making the "sour-water" with which they prepare their dyes.

BRANCALEONE, **DANDOLO**, a noble of Bologna, who, although a foreigner, was made chief magistrate by the people of Rome in 1253. The patricians and brigands, whose licentiousness and depredations had proved fatal to the public good, were promptly consigned by him to the gallows. He forced Innocent IV. to respect the rights of the people, and instituted a form of government which after 2 years appalled the Romans themselves by its severity, and caused them to depose him; but only to recall him in 1257, when he resumed his iron rule until his death in the following year.

BRANCH, a southern county of Michigan, bordering on Indiana, and having an area of 528 square miles. The St. Joseph's and Prairie are the principal rivers. The soil is a rich, sandy loam; the surface undulating, and occupied by dense forests and oak openings. Iron is found in several places. The products of the county in 1850 were 161,284 bushels of wheat, 266,816 of corn, 123,298 of oats, 118,892 of potatoes, 11,008 tons of hay, and 57,007 pounds of wool. The public schools numbered 848 pupils. Capital, Coldstream. Pop. 12,472. The county was formed in 1833, and named in honor of John Branch, secretary of the navy under President Jackson.

BRANCH, **JOHN**, an American statesman, born at Halifax, N. C., in 1782. He was educated at the university of North Carolina, became a lawyer, and one of the judges of the superior court, and was in 1817 elected a senator in the state legislature, and in 1823 a senator in the national congress. He was secretary of the navy in the first cabinet of President Jackson, returned home on the dissolution of that cabinet, and was elected a representative in Congress in 1831. He was in 1834 again a member of the state senate, in 1835 a member of the state convention for the revision of the constitution, in 1838 the democratic candidate for governor, and in 1843 was appointed governor of the territory of Florida.

BRANCHIÆ (Gr. *ῥαγία*, gills of a fish), organs by which the fluids circulating in the bodies of animals that live in the water are minutely subdivided, and in this state presented in respiration to the action of the air contained in the water.

BRANCHIOPODA (Gr. *ῥαγία*, gills, and *πῶς*, a foot), an order of the section *entomostracia* of the crustacea, the animals of which are small, mostly inhabit stagnant fresh water, and are provided with feet which are used only for swimming, except that in some instances they contain the organs of respiration. The bodies are protected by a corneous or membranous covering, with a shield in one piece, or divided like a bivalve shell. One species, the *branchipus stagnalis*, is common in New England in stagnant pools. It is about an inch long, and is furnished with numerous fringed legs, which are in constant motion.

BRANDE, **WILLIAM THOMAS**, an English

chemist, born in 1780. He succeeded Sir Humphry Davy in his professorship at the royal institution, after having long been his assistant. His chief works are: "A Manual of Chemistry," "Outlines of Geology," and an "Encyclopædia of Literature, Science, and Art."

BRANDENBURG, the cradle of the Prussian kings, and the most important Prussian province, known in the times of Cæsar as the home of the Suevi, was invaded by many different races, until the Saxon influence became predominant in 928 under Henry the Fowler, who conquered the principal town, Brannibor. The first bishopric was established at Havelberg in 946. The Wenda, however, could not be entirely subdued, and the political organization satisfactorily completed, until the middle of the 12th century, when the emperor Lothar gave the northern part of the province to Albert the Bear, who first assumed the title of margrave of Brandenburg, and conquered the other parts of the province. His descendants founded Berlin, the capital of the province and afterward of Prussia. Albert's dynasty became extinct in 1323 in the person of Margrave Henry, and the province was then given to Louis of Bavaria. After passing through various other political changes, it was presented in 1415 by Emperor Sigismund, to Frederic VI. of Hohenzollern, burgrave of Nuremberg, who became the progenitor of the present Prussian dynasty. The most eminent of the princes who succeeded him was Joachim II., who was one of the first German princes to join the reformation, and who signed his name to the protest of Spire, from which the Protestants took their name. Under the reign of subsequent sovereigns, especially of Frederic William, the great elector, Brandenburg reached a high degree of prosperity. The country is now intersected with canals and railroads. The principal rivers are the Elbe, Oder, Haver, and Spree. There are 700 lakes, and many swamps and morasses, some of which, however, have been drained. The soil is sandy and not favorable for cattle, though the province has 2,500,000 sheep; and agriculture is pursued with success. The raising of bees is an important branch of industry, and tobacco is produced in large quantities. Manufactures abound. Area, about 15,000 square miles. Pop. in 1856, 2,254,305, all Protestants, excepting 87,962 Roman Catholics, 24,196 Jews, 9 Turks, 95 members of the Greek church, and 19 Mennonites.—There is also a city of the same name, founded in the 7th century; it is the capital of the circle of West Havelland, in the government of Potsdam, and province of Brandenburg, with a castle, gymnasium, and 9 schools, public library, theatre, hospitals, &c., manufactures of woollens, linens, hosiery, paper, hats, leather, &c., and a considerable trade. Pop. in 1856, 19,383.

BRANDENBURG, **FRIEDRICH WILHELM**, count, a Prussian general and statesman, the son of King Frederic William II. by hismorganatic marriage with the countess von Doen-

hoff, born in Berlin, Jan. 24, 1792, died Nov. 6, 1850. In his military career he gave proofs of courage and capacity on various occasions, especially in the final campaigns against Napoleon; but he became chiefly conspicuous by his position as premier of the Prussian cabinet in 1848, and by his subsequent negotiations with the emperors of Russia and Austria, chiefly on the question of the preponderance of Austria in German affairs, to which he was much opposed.

BRANDES, HEINRICH WILHELM, a German savant, born in the village of Groden, July 27, 1777, died in Leipzig, May 17, 1834. He studied hydraulics and mathematics, and after perfecting his knowledge at the university of Göttingen, participated in Benzenberg's astronomical labors. In 1811 he became professor of mathematics at Breslau, and in 1826 received a call to the university of Leipzig, of which he was rector at the time of his death.

BRANDING, in criminal law, was the marking of convicted felons with a hot iron on the hand or face. A layman claiming benefit of clergy, if entitled to it, was discharged upon being burnt in the hand. This was not as a punishment so much as to show by an indelible mark that he had been allowed the benefit of clergy *once*, the rule being that it was not allowable to a layman more than once. See BENEFIT OF CLERGY.

BRANDIS, CHRISTIAN AUGUST, a German professor of philosophy at Bonn, born at Hildesheim, Feb. 18, 1790. He studied at Kiel and Göttingen, and took his degree at Copenhagen in 1812; lectured there on philosophy; went to Berlin; accompanied Niebuhr to Rome in 1816, but soon returned, to engage in the publication of the works of Aristotle. He visited Greece in 1837, at the invitation of King Otho, and remained there several years as his secretary. His *Mittheilungen über Griechenland*, and his *Handbuch der Geschichte der Griechisch-Römischen Philosophie*, are especially valuable.

BRANDIS, JOACHIM DIETRICH, a German physician, born at Hildesheim, March 18, 1762, died in Copenhagen, April 28, 1846. He was a skilful practitioner, and published many valuable original works.

BRANDT, NICOLAUS, a Hamburg chemist of the end of the 17th century, who, in order to restore his broken fortunes, devoted himself to alchemical experiments, with a view of converting silver into gold, and of finding the philosopher's stone. One day in 1677, while engaged in distilling a mixture of sand, lime, and urine, he discovered a shining substance, which turned out to be phosphorus. He sold his discovery to Kraft of Dresden, who communicated it to Leibnitz and Boyle.

BRANDY, the liquor distilled from the juice of the grape and of other fruits, as apples, pears, peaches, cherries, blackberries, &c. The peculiar taste and aroma of wine brandy are derived from a volatile oil of the husk of the

grape. Rectification by repeated distillation clears the liquor of this fragrant substance, as also of its water, and converts it into alcohol. The average proportion of the latter in brandy varies from 48 to 54 per cent. The essential oil, when distilled from the husk alone, is so powerful, that a few drops of it are sufficient to taint a large cask of spirit. Beside these ingredients, brandy contains coloring matter, tannin, cænanthio ether, and a little acetic ether. Cider, peach, perry, cherry, and other brandies, only differ from each other and from wine brandy by their peculiar volatile oils, which they contain in very small quantity. These give to them the peculiar properties by which they are readily distinguished by one familiar with them. Brandies are commonly known as pale or dark. When first distilled, the liquor is without color, and the pale amber tint it acquires is derived from the wood of the cask in which it is kept. This becomes deeper by age, and to imitate it, burnt sugar is added to the newly distilled brandy. The best brandies come from France, the most esteemed of which are those of Cognac and Armagnac. As the value of these is greatly increased in consequence of partial failures of the vintage, and the largely increased demand, it has become an object to adulterate them, so that pure French brandy is now hardly to be obtained. Common whiskey is exported from the United States to France in large quantities, and is brought back converted into a factitious brandy. This is also produced from a variety of other ardent spirits. Rum, beet-root spirit, and that of potatoes, are largely used in France for its manufacture, and similar processes are also carried on in this country. From the immense quantities of pure spirits imported into France, and the small quantity exported, except in the shape of brandy and wine, it follows that a great proportion of these are nothing more than grain or beet-distilled liquor, colored, flavored, and named to suit the market to which it is sent. The products of the vine have greatly decreased in all the districts of France, while the exports of the so-called vinous liquors have greatly increased. The distillation of beet spirits amounted in the year 1858 in France to but \$100,000, while in 1856 it exceeded \$10,000,000. The inferior spirits are carefully rectified by repeated distillations over freshly burnt charcoal and quicklime, to deprive them of their peculiar flavors, which would, if left behind, betray the imposition; and the essential oils are then added, which have the odor of the ether it is desired to imitate. Dr. Ure does not scruple to give a recipe for manufacturing factitious brandy, which, he says, is free from the deleterious drugs too often used to disguise and increase the intoxicating power of British brandies, and which may be reckoned as wholesome as alcohol in any shape can ever be. To pure alcohol diluted to the proof pitch, from half a pound to a pound of argol (crude winestone) is to be added, dissolved

in water; with this a little acetic ether, also some French wine vinegar, bruised French plums, and flavor stuff from Cognac. (This is murk, or the refuse skins and pips of the grape left after distillation of the wine. It contains the less volatile ingredients of the grape, as the salts and most of the water—the alcohol having distilled over. It is largely imported into England to redistil with molasses for manufacturing the article known as "British brandy.") The mixture is then distilled over a gentle fire in an alembic furnished with an agitator. Nicely burnt sugar (caramel) is added to the spirit which comes over, to give the dark red tint of age, and a few drops of tincture of catechu or oak bark give the astringent taste and property of the tannin contained in the real brandy. As our knowledge of organic chemistry becomes more precise, it is probable that we shall be enabled to imitate with almost perfect success many choice productions of nature in this department, as we have already done in reproducing many of the brilliant gems of the inorganic kingdom. But the imitations of brandy so far produced are not so perfect but that they may be easily detected. In the report of an examination by Dr. Hassall, of the "Lancet," of 18 samples of brandy purchased in London, it appears that the majority consisted of the so-called British brandy; the alcohol ranged from 80 to 50 per cent.; nearly all were colored with burnt sugar, but in none of the samples was any cayenne present, though the rum and gin purchased at the same places were found to contain it.—As a medicine, brandy is considered the most useful form in which alcohol is administered. In advanced stages of fever, it acts as a cordial and stomachic, when other remedies afford no relief.

BRANDYWINE CREEK rises in the N. W. part of Chester co., Penn., and flowing through the interior in a S. E. direction, empties into the Christiana creek at the city of Wilmington, Del. It furnishes power throughout its course for many valuable mill seats. On its banks the Americans, 13,000 strong, under Washington, were defeated by the British and Germans, 18,000 strong, under Howe, Sept. 11, 1777.

BRANECKI, or BRANICKI, FRANCISZEK XAWIER, the last great constable of the Polish republic, died in 1819, was born of an obscure family, most probably of Tartar origin, and served in the military household of Jan Klemens Branicki. In the events of Poland, he appears for the first time in 1762 as an attendant of Poniatowski, at his visit to St. Petersburg, and as the abettor of his amours with Catharine II. Poniatowski owed his escape to Branecki on one occasion, when one of his interviews with Catharine was discovered by Paul. When his master became king, Branecki was rapidly advanced, through the influence of Catharine, and after the death of the former great constable, he changed a letter in his

name, taking that of Branicki, on succeeding to that dignity. He was always a prominent adherent of Russia, and sustained that power in all its acts of war, violence, and persecution of the patriots under the leadership of Pulawski. In 1778 he was foremost in facilitating and sanctioning the 1st dismemberment of Poland. Afterward, he opposed the efforts of the nation for a reinvigorating reform, formed the celebrated confederacy of Targowitza in 1793, which resulted in the 2d dismemberment, and was the death-blow to national existence. In 1794 he was proclaimed a traitor to his country. After the 3d and final division of Poland in 1795, he retired with his wife, a niece of the celebrated Potemkin, to his immense estates, counting 120,000 serfs, called Biala-Cerkeff, situated in the Ukraine. It was a gift of Catharine, and was taken from the Polish crown domains. There he died, overwhelmed with gifts from the Russian emperors, and with the execration of the Poles. His descendants are counted among the richest private individuals in Russia and Poland. In 1841 they were created counts by the emperor Nicholas.

BRANICKI, JAN KLEMENS, a Polish statesman, born in 1688, died in 1771. In his youth, he served in the French army. In 1717 he returned to Poland. He rose to the highest dignities, was an opponent of King Augustus II., and the zealous champion of the nobility. After the death of Augustus III., he officiated as great constable and first senator of the kingdom, and stood at the head of the republican party, but defended the privileges of the nobility. He was offered the crown by a great majority of the nobles who constituted the nation. The party of the Czartoryskis, backed by Russia, was, however, triumphant. Poniatowski was elected, and Branicki was outlawed, and escaped to Hungary. As his wife was a sister of the new king, he soon returned, and recovered his dignities. He was called by the nation the last patriot, and at his funeral was performed for the last time the mediæval ceremony of the ancient chivalry, that of breaking the coat of arms, and entombing it with the body of the last member of a noble line.

BRANK, a bridle for the tongue, formerly used in Scotland, and sometimes in England, for correcting scolding women. It resembled closely the common horse bridle; the head of the offender was inserted within it, and a sharp iron was brought as a bit well into the mouth, and made to keep its place by an arrangement of straps and buckles. The tongue was thus obliged to retreat to the rear and keep quiet. In this harness the tamed shrew was not unfrequently led in triumph through the streets.

BRANT, a south-west county of Canada West, comprising an area of 416 square miles, and drained by Grand river. The surface is somewhat diversified, but most of it is level. The soil is exceedingly fertile. The productions of the county in 1852 were 625,741 bushels of wheat,

18,459 of rye, 126,114 of Indian corn, 23,104 of buckwheat, 28,885 of barley, 281,716 of oats, 106,244 of potatoes, and 79,981 pounds of wool. Capital, Brantford. Pop. in 1857 estimated at 29,557.

BRANT, JOSEPH (THAYENDANEJA), a Mohawk chief, born in Ohio about 1742, died Nov. 24, 1807. He was frequently spoken of as a Shawnee by birth, and only a Mohawk by adoption, and it has also been said that he was a son of Sir William Johnson. Having taken a part in the campaign of Lake George in 1755, and in various subsequent conflicts, he officiated, after Sir William Johnson's death, as secretary of George Johnson, superintendent-general of the Indians, and when the American revolution began he was instrumental in exciting the Indians against the colonies. His presence at the massacre of Wyoming is doubtful, though he took part in that of Cherry Valley, and in other sanguinary engagements. He was received with great distinction on his tour to England in 1786, and was attached to the military service of Sir Guy Carleton, in Canada. He opposed the confederation of the Indians which led to the expedition of General Wayne, and did all he could to prevent peace between the Indians and the United States. He was, however, zealously devoted to the welfare of his own people, and conspicuous for his efforts to prevent the introduction of ardent spirits among them; was a brave warrior, and noted for his ability, as testified by his correspondence. During his stay in England, he collected funds for a church, which was the first one built in Upper Canada. He there also published the "Book of Common Prayer" and the Gospel of Mark, in Mohawk and English. He spent the latter part of his life at Burlington bay, near the head of Lake Ontario, where he built a house for himself upon a tract of land conferred on him by the British government. One of his sons was somewhat distinguished in 1811 and 1812 as the leader of a body of Canadians and Indians employed by Great Britain against the United States. The "Life of Brant" has been written by Col. W. L. Stone, of New York.

BRANTFORD, a town on Grand river, the capital of Brant co., Canada West. A canal, $2\frac{1}{2}$ miles long, connects it with the head of navigation on the river, and thus opens an uninterrupted water communication with Lake Erie. The Buffalo and Lake Huron railway was completed to this point in Jan. 1854, and the company have extensive buildings in the town, comprising a repair shop, machine shop, foundry, and engine house. There are churches belonging to various denominations, 4 newspaper offices, about 60 stores, agencies of the bank of Montreal, bank of British North America, and several insurance companies. The principal manufactures are brass and iron castings, tin and japanned ware, sashes, blinds, agricultural implements, and stoneware. Pop. in 1858 about 8,000.

BRANTÔME, PIERRE DE BOURDEILLES, a

French biographer and chronicler, born about 1540, died July 15, 1614. He was chamberlain of Charles IX. and Henry III.; took an active part in the campaigns against the Huguenots and Turks; and has written historical works which embrace many interesting memoirs, anecdotes, and sketches of the celebrities of his time.

BRANXHOLM, or BRANKSOME, a place in the county of Roxburgh, on the Teviot, Scotland. It is the ancient seat of the dukes of Buccleugh, but owes its chief renown to the fact of its being the scene of Sir Walter Scott's "Lay of the Last Minstrel." The ancient castle has been replaced by a modern edifice, connected with which, however, is a square tower, the sole remaining relic of the old stronghold.

BRANXTON, a parish of England, and the scene of the battle of Flodden, fought Sept. 19, 1513. A monumental pillar marks the spot where the conflict took place.

BRASCASSAT, JACQUES RAYMOND, a French painter, born in Bordeaux, Aug. 30, 1805. In 1825 he took the first prize of the academy of fine arts, for historical landscape, after which he went to Rome to complete his studies. He has produced many fine landscapes with animals, and became a member of the academy of fine arts in 1848.

BRASHER, ABRAHAM, a colonel in the army of the United States, born in New York, Dec. 2, 1734, died in exile during the revolution, in 1782. He was one of the most active associates of the "liberty boys" of his native city. He wrote many of the popular ballads of the revolutionary period, and was a constant contributor to the newspapers of his day. Among his poetical productions, were "Another New Year's Address," and the "General's trips to Morristown," both of which were favorites in the American camp.

BRASIDAS, son of Tellis, was the greatest character produced by Sparta in the 1st period of the Peloponnesian war. After covering himself with glory at Pylos and Megara, he was sent with an army into Thrace to succor Perdiccas, and to operate against the Athenian colonies. Brasidas was slain at Amphipolis, 422 B. C., in a battle in which he totally defeated an Athenian army under Cleon.

BRASS. Of all the alloys of one metal with another, none are more useful than those of copper with zinc, forming the different varieties of brass. This alloy appears to have been in use at a very early period, if the Latin word *æs* is correctly translated brass instead of copper, for Lucretius observes, *Et prior erat æs quam ferri cognitus usus*—"the use of brass was known before that of iron." Pliny speaks of its use soon after Rome was founded, and states that Numa, the successor of Romulus, formed the workers of it into a kind of community. It is also certain that before zinc was ever obtained as a distinct metal, its alloy with copper was in use, the zinc ores being reduced in process of

making the alloy by the charcoal mixed with them; when thus formed, the metallic zinc is absorbed in the copper placed in the crucible, without once appearing in its own form. Brass continued to be manufactured in this manner till the year 1781, and the process is still in use, though the more usual method is to melt the metallic zinc, and introduce the copper in thin alips. When enough copper is added to render the alloy of difficult fusion, the heat is increased and the additional copper required is introduced in a melted state. Another process is to melt the copper first, and plunge beneath its surface lumps of zinc held in iron tongs. If it were attempted to melt the two metals together, the zinc would be in great part consumed before the mixture reached the high temperature required to melt the copper; and yet these metals combine so readily, that copper is sometimes converted into brass upon its surface, only by the fumes of burning zinc. By any method of preparation there is a considerable loss of zinc by its escaping in fumes of the oxide. A layer of fine charcoal placed upon the melted zinc protects it from contact with the atmosphere, and reduces this loss to the least amount. Pieces of glass, thrown upon the surface of the metal, melt and cover it also with a thin protecting layer; these also serve to prevent the oxide of zinc from mixing with the alloy, and producing spots or stains with little cavities in the brass. Owing to the uncertain quantity of zinc which escapes, the exact proportions of the two metals are rarely known; and the recipes of the manufacturers do not indicate the use of uniform proportions, as these generally include certain quantities of old brass, the composition of which is never exactly known. Beside, by each remelting, an additional loss of zinc is incurred, by which the proportions are continually changed. It is, however, believed that the best qualities of brass are those in which the metals are combined in the proportions of their equivalents. The usual composition of brass is in the proportion of 2 parts by weight of copper to one of zinc. The brass founders express this composition by the term, "8 ounces of zinc" (to a pound of copper being understood). Sixteen ounce brass, or copper and zinc in equal weights, is a beautiful golden yellow alloy called prince's metal. Muntz's patent sheathing or "yellow metal" is produced with this extreme proportion of zinc, or in less proportions, varying to 9 ounces. The best is 2 parts of zinc to 8 of copper, which is also the most malleable composition. Brass composed of 8 to 4 ounces of zinc, is known by the names, bath metal, pinchbeck, Mannheim gold, &c., which resemble the poorer alloys of gold. Brass solders vary in the proportion of their ingredients, according to the uses to which they are to be applied. The most common mixture is equal parts copper and zinc; some of the zinc, however, is lost in the fusing and casting. Brasses containing less than 10 ounces of zinc are, to some extent, malleable and

ductile; with additional zinc, they become crystalline, hard, and brittle. The red color of the copper merges into that of yellow brass at about 4 or 5 ounces zinc, above 10 ounces the white color of the zinc predominates. Gun-metal is also called brass, though it is an alloy of copper and tin. This was the composition of the brass of the ancients, and the same mixtures are used for bell metal, the tin having the effect of giving hardness and elasticity, and zinc is sometimes added to increase the shrillness of the sound. In the proportion of 11 parts of tin to 4 of copper a very white and brilliant alloy is produced, which is used for the specula of telescopes. Bell-metal alloy is usually made of 11 parts of tin and 86 of copper.—Gun-metal and hard castings for machinery, as also bronze statues, contain from 96 to 108 parts of copper and 11 of tin. Corinthian brass was a mixture of gold, silver, and copper.—Brass colors are preparations made to imitate brass, and are applied to figures of plaster. Fresh and bright copper filings of the smallest size are mixed with varnish, and if a red color is desired, finely pulverized red ochre is added. The varnish protects the copper filings from oxidation, and the effect is very much the same as that of cast brass. The best varnish is made of 20 ounces of alcohol, 3 ounces of shellac, and 2 ounces of sandarac. Brass leaf, which is much used for gilding, consists of thin sheets of copper, rendered yellow by exposure to the fumes of zinc. The powder prepared from these leaves by grinding them in a mortar, when mixed with gum water, is used as a wash to imitate bronze or even fine gold. The color is varied and heightened by exposure to the fire, and stirring in an earthen basin. Brass is obtained by the action of the galvanic current from solutions of the two metals in which the proportion of zinc greatly predominates, this being more difficult to reduce from its salts than the copper. The operation, according to Dr. Heeren, succeeds best with a mixture of 1 part of sulphate of copper to 4 parts of warm water, to which are added 8 parts of sulphate of zinc, dissolved in 16 of warm water, and 18 of cyanide of potassium with 85 of warm water. On mixing the solutions, a precipitate appears, which redissolves by adding a little more of the potassium salt. On adding 250 parts of distilled water, the solution heated to ebullition is subjected to the action of 2 Bunsen elements, charged with concentrated nitric acid mixed with $\frac{1}{10}$ of oil of vitriol. A plate of brass is attached to the negative pole, and the object to be coated to the positive pole. The deposit is rapidly formed if the bath be very hot. After a few minutes, there is produced a layer of brass, the thickness of which augments rapidly. Deposits of brass have thus been made on copper, zinc, brass, and britannia metal. Prof. A. K. Eaton states that he has deposited brass without difficulty, from the cyanide solution alone heated to the boiling point, a plate of brass being attached to the negative pole. The solu-

tion, after a time, becomes charged with the two metals, and when so charged, deposits brass upon the positive pole. By varying the temperature, he noticed that the different metals may be obtained separately, or in alloys of different proportions.—A new alloy of copper and zinc has been lately prepared in France, which by the introduction of other substances is made to resemble gold so nearly, that the name of *oreide* has been applied to it. It is remarkable for its fine grain and susceptibility of receiving a high polish. To prepare it, 100 parts by weight of copper are melted in a crucible, and, while this is in fusion, 6 parts of magnesia, 8.6 parts of sal-ammoniac, 1.8 of quick-lime, and 9 of crude tartar are added little by little, and stirred in, and the stirring is continued for about half an hour. Seventeen parts of zinc are then added in small grains, or if tin is used instead, an alloy of greater brilliancy will be obtained. After being stirred again, the crucible is covered and kept hot for about 35 minutes. It is then uncovered, carefully skimmed, and the alloy is cast in a mould of metal or damp sand. It is somewhat malleable, and melts at a temperature low enough to admit of its being used as brass.

BRASSARDS, jointed plates of steel, protecting the upper arm, from the shoulders, which were covered by poldrons, to the elbows, where they were met by the gauntlets. These pieces of armor were not used in the chivalric ages, or in full suits of knightly armor, but in the half armor worn during the wars of Gustavus Adolphus, Wallenstein, and the Low Countries, in the times of Cromwell, when plate armor was going out of use. In full suits, the shoulders were protected by the pass-guards and *grande garde*, the upper arm by the *rere-braces*, the elbows by the *garde de bras*, the fore arm by the *vant-braces* or *vam-braces*—*avant de bras*—and the hands and wrists by the steel gloves.

BRATAYUDA, the most notable literary production of the Javanese, and of the Malay archipelago. It is an epic; and so far resembles the Mahabharata in the principal incidents of its story, as to be regarded as a paraphrase of that well-known Hindoo poem. According to evidence furnished by the work, it was written near the close of the 12th century by a Javanese sage called Pusadali. It compares with the Hindoo epic, as the *Æneid* does with the *Iliad*, in the extent of imitation of style and character of the incidents; and it holds a similar position among the Javanese and civilized Malays. Some of its passages are quite Homeric, in describing the powers of certain heroes; as, for instance, the effects produced by the rage of Cresna, when informed of a treacherous plot against his life: "His huge body swayed to and fro, and his breathing was like a lion's roar. The foundations of the earth were shaken: the bases of the mountains were loosened, and their tops nodded; the sea rising up like the mountains, and casting the deep water fish at

their base." It also abounds in pathetic strains. It contains 2,876 metric lines.

BRATTLE, THOMAS, a Boston merchant, born Sept. 5, 1657, died May 18, 1718. He graduated at Harvard college in 1676, and was afterward treasurer of that institution. There is preserved, in the historical collections, an excellent account by him, in the form of a letter, of the witchcraft delusion in 1692. Several of his communications on astronomical subjects were also published in the "Philosophical Transactions."

BRATTLEBOROUGH, a post-township of Windham co., Vt., situated on the west bank of the Connecticut river, about 100 miles south of Montpelier and 96 west of Boston. Pop. in 1850, 8,816. The first settlement of the state was made here in 1724, when a military post, called Fort Dummer, was erected on a spot now known as "Dummer's meadows." The township contains an East and West village. The West village, on Whetstone creek, is devoted principally to agriculture. The East village is situated on the Connecticut river at the mouth of Whetstone creek, and at the junction of the Vermont Valley, the Vermont and Massachusetts, and the Connecticut river railroads. Pop. about 1,500. A covered bridge across the Connecticut river connects it with Hinsdale, in New Hampshire. It is one of the wealthiest villages in the state; contains 6 churches, an academy, a bank, 2 newspaper offices, and is the seat of the Brattleborough typographic company, established in 1836, with a capital of \$150,000, and having a paper mill and extensive printing house. An asylum for the insane, endowed with \$10,000 by Mrs. Anna Marsh, and still further enriched by appropriations from the state, was opened in 1836 a short distance N. W. of the village. There are also 2 water-cure establishments.

BRAUBACH, a circle and town of the duchy of Nassau, Germany, on the Rhine. On a mountain overlooking the town stands the strong castle of Maxburg, and in the vicinity are the old fortress of Philippsburg, the mineral springs of Dinkhold, and silver and copper mines. Pop. of the circle, 12,000; of the town, 1,500.

BRAUN. I. AUGUST EMIL, a German archaeologist, and author of many works on art, born at Gotha, April 19, 1809, died in Rome, Sept. 12, 1856, where he had resided since 1833. For more than 23 years he officiated there as secretary of the archaeological institute. His last productions were: *Die Vorschule der Kunst-Mythologie* (Gotha, 1854, with 100 plates; English translation by Grant, Gotha, 1856); *Die Griechische Götterlehre* (Gotha, 1851-'55); and his excellent guide-book entitled, *Die Ruinen und Museen Roms* (Brunswick, 1854; translated into English in 1855). II. JOHANN WILHELM JOSEPH, a Prussian Roman Catholic theologian, born April 27, 1801, near Düren, was consecrated as priest at Rome in 1825, and on his return became connected with the university of Bonn,

receiving, in 1837, the appointment of professor. In conjunction with Hermes and Droste-Hülshoff, he founded *Die Zeitschrift für Philosophie und Katholische Theologie*. In 1835, Hermes' lectures were suspended by order of the Vatican, and in 1837 Braun proceeded to Rome, but his efforts to change the decision of the pope were not successful, and, in 1843, the objection of the papal court against Hermes and his disciple proved also injurious to Braun himself, who was compelled to relinquish his professorship, although the salary was not withdrawn. In 1848 he became a member of the Frankfort parliament, and in 1850 member of the first session of the Prussian diet. III. KASPAR, a German artist, born at Aschaffenburg in 1807, founded the humorous publication called the *Fliegende Blätter*, and is noted for his outlines to the *Nibelungenlied*, to *Göts von Berlichingen*, and other works.

BRAUNAU, a Bohemian circle in the district of Gitschin, pop. about 46,000.—Also a town of the same name, pop. about 3,000. The town contains a rich Benedictine abbey, founded in 1381 and rebuilt in the early part of the 18th century. In connection with the abbey is a royal gymnasium.

BRAUNSBURG, a Prussian town and capital of a circle of the same name; pop. of the circle 45,700, and of the town, 9,600. In former times, the town was the seat of the bishops of Ermeland. It has an ancient castle, a Catholic lyceum, and a grammar school. During the Russian campaign, Feb. 1807, Braunsberg was an important strategical point, from its position on the river Passarge.

BRAUWER, or BROUWER, ADRIAN, a Dutch painter, born at Haarlem, or at Oudenarde in East Flanders, in 1608, died in Antwerp in 1640. He first made designs of flowers and birds, which were stitched upon caps and bonnets sold by his mother, a poor woman, to the peasants. Francis Hals, a distinguished painter of Haarlem, happening to see some of these, was so struck by the talent which they evinced, that he invited the young artist to receive instructions at his house, where he kept him hard at work in a garret, and appropriated to himself the proceeds of his pictures. Here Brauwer remained for many months, ignorant of the estimation in which his talent was held abroad, until by the assistance of his fellow pupil, Adrian van Ostade, he was enabled to escape to Amsterdam. The discovery of the reputation he had acquired seems to have crushed rather than incited his ambition. Perceiving the prices which his pictures commanded, and his own facility in executing them, he yielded to a natural taste for gross pleasures, and painted only when it was necessary to procure money to indulge in dissipations. During the wars with Spain, he started on a journey to Antwerp, but, being unprovided with a passport, he was imprisoned on suspicion of being a spy. The duke d'Arenberg, a fellow prisoner, recognizing his talent, induced him to paint

something. The subject was a group of soldiers playing at cards, which the artist sketched from his prison window, and the picture being shown to Rubens, he at once pronounced it a work of Brauwer, whose release he immediately procured, and whom, from admiration of his genius, he received as an inmate into his house. Brauwer's longing for his old life, however, soon induced him to leave his protector, and after a brief career of reckless dissipation, he died in the public hospital of Antwerp.

BRAVO. I. LEONARDO, a Mexican revolutionary patriot, born near San Luis de Potosi, in 1766, enlisted in the revolutionary cause, and died of prison fever, in the hands of the Spaniards, in the city of Mexico, in 1812. The Spanish commander had repeatedly offered him his liberty on condition of taking service in the royal army, but, though the fever caused by confinement in a filthy dungeon was wearing out his life, he steadily refused to save it on such conditions. II. NICOLAS, son of the preceding, born at Chilpanzingo about 1792, died there April 22, 1854. He entered the service of his country at the first revolutionary outbreak. After the capture of his father at the evacuation of Cuautla, 200 Spanish prisoners, some of them of high rank, fell into his hands. He immediately sent a flag of truce to Vanegas, offering to liberate his own prisoners if the viceroy would send his father as a prisoner to Spain, instead of executing him in Mexico. The proposal came too late, the father having died of prison fever: but Bravo at once, with the greatest magnanimity, released the whole of his prisoners, assigning as a reason, that he wished to free himself from the temptation of a terrible revenge. He was present at the capture of Acapulco in 1812, and of Oajaca in the same year, serving also in all the various actions in 1813 and 1814: among them the battle of Valladolid, where Iturbide, who was at that time in the royalist service, so signally defeated the patriots. After the execution of the padre Matamoros, he was an unwilling spectator of the execution of the whole of the Spanish prisoners, whom Morelos put to death by way of reprisal. After the capture of Morelos in the department of Vera Cruz, who, previous to his last battle, had confided to him the guardianship of the congress, and after Teran had forcibly dispersed that body in Oct. 1814, Bravo wandered over almost the whole of the Mexican republic without being able to make head against his pursuers. When Mina came from the United States with his party, he joined him and sought, but failed, to keep possession of Corbora. In 1817 he was taken by the viceroy Apodaca, who spared his life only at the urgent solicitation of many prominent royalists. He was imprisoned in the city of Mexico until the general amnesty granted by Ferdinand VII., on occasion of his taking the oath to the Spanish constitution of March, 1820. When, on Feb. 24, 1821, Iturbide established the independence of Mexico by the plan of Iguala, he was supported by Bravo, who was a member of

the 3d regency which exercised supreme power from April 11 till May 18, 1822, when Iturbide proclaimed himself emperor. To this step Bravo was opposed, and he contributed in no small degree to Iturbide's deposition. He again became a member of the provisional government which remained from April 1, 1822, till Oct. 10, 1824, when the federal constitution took effect, under which he was elected to be vice-president until April 1, 1829, Guadalupe Vittoria being president. The politics of Mexico had now become involved in a controversy in which the order of freemasons, divided into 2 parties, one known as *Escocés* and the other as *Yorkinos*, contended at once for the Scotch and ancient York rituals, and the one for a centralized, and the other for a federal, form of government. Bravo was grand master of the Scotch division, and when the federal system prevailed he became a leader of the opposition. Notwithstanding this, he had been elected vice-president; but when on Dec. 23, 1827, the standard of revolt was raised at Otaviba, he became the head of the movement. The purpose of the *pronunciamiento* was to replace the actual members of the executive government with men of the *Escocés*, and to dismiss Mr. Poinsett, then United States minister in Mexico, who was charged with too actively favoring the other party. The insurgents fortified themselves at Salancingo, where they were routed by Guerrero, whom President Vittoria had sent against them. Bravo, Barragan, and 25 other officers were made prisoners, and after being kept 5 months in confinement were banished to Guatemala for 6 years on half pay. Bravo was recalled in 1830 by President Bustamante, and sent by him against Guerrero, now an insurgent in his turn. Guerrero was taken in arms, and executed by Bravo's orders, Feb. 14, 1833. After this Bravo remained in retirement until July, 1839, when, as president of the council, he was charged with the supreme administration of the government during an interim of a week. Again from Oct. 26, 1842, till March, 1843, he was substituted as president by Santa Anna, during his absence as dictator at the head of the army. For the last time he held executive power as temporary president from July 29 to Aug 4, 1846, when he was deposed by a revolution. On the commencement of the war between Mexico and the United States, he took up arms in behalf of his country, and participated in the battle of Cerro Gordo. In the autumn of 1853 he was accused by the ministers of Santa Anna of having secretly joined Juan Alvarez in the insurrection he had set on foot; but he at once denied the accusation and declared that he had retired from public life forever. In Feb. 1854, Santa Anna left Mexico to attack Alvarez, and while he was at Chilpanzingo, 8 or 4 months afterward, Bravo and his wife suddenly died, within 3 hours of each other. This gave rise to the suspicion that they had been poisoned, but no evidence was ever brought forward to sustain the imputation. Bravo is regarded by intelligent Mexicans as one of the

most upright, honorable, and distinguished men whom their country has produced.

BRAVO-MURILLO, JUAN, a Spanish statesman, born at Frejoul de la Sierra, in the province of Badajoz, in June, 1803, of an honorable, but rather poor family, received the means for his education from a generous priest, who was struck with his abilities. In 1825 he graduated as an advocate at the university of Seville, and although, for some time, pecuniary difficulties induced him to accept a professorship of philosophy, he soon resumed his position as lawyer, and gradually distinguished himself by his oratorical power, especially by an eloquent defence of Col. Marquez, who, in 1831, was implicated in a conspiracy. This circumstance induced the minister Garelly to tender him the office of attorney-general at Caceres. The ultra-progresista party coming into power in 1835, he tendered his resignation, partly to anticipate any action on their part in reference to his office, but principally to carry out a long-cherished project, and to remove to a wider sphere of activity in Madrid, where he established himself as a lawyer, and, in 1836, in conjunction with Pacheco, published the *Boletín de Jurisprudencia*. During the 8 months previous to the downfall of Isturitz, he filled the office of secretary in the department of state under his administration. He was also one of the founders and principal contributors of *El Porvenir*, a journal directed against the government. He took his seat in the cortes as member for Seville in 1837. The ministry of justice was tendered to him, which he refused on this, and on a subsequent occasion in 1838, when he declined to take office under the administration of the duke of Frias. On the advent of this cabinet he lost his seat in the cortes, which, however, he regained in 1840, when the moderate party of the province of Avila elected him a deputy. His influence gradually increased, until, in 1841, he was looked upon as the leader of the moderate party, and, as such, subjected to imprisonment on the outbreak of the revolution. He escaped to Bayonne, where the news of his banishment and the downfall of the revolutionary party which had decreed it arrived simultaneously, permitting him to return to Madrid. He resumed his profession until 1847, when, for a short time, in the cabinet of the duke of Sotomayor, he was at the head of the ministry of justice, until Pacheco came into office. In Nov. 1847, at the formation of a new cabinet, he entered it as minister of trade and public instruction. In 1849-'50 he was minister of finance, which office he retained in 1851, when, after the return of Narvaez, he was charged with the formation of a new cabinet. Until 1852, he was president of the cabinet, and, at the same time, finance minister. His promotion to the presidency of the cabinet was due, to some extent, to the regard in which he is held by the queen-mother, Maria Christine, who influenced Queen Isabella in his favor. Since 1852 he has been again a member of the

legislature; more recently he has officiated as president of the house of deputies. He enjoys the reputation of an upright man, an able lawyer, and a skilful financier.

BRAVURA AIR (Ital. *aria di bravura*), an air enabling the singer to exhibit his skill in execution by the addition of various embellishments.

BRAXTON, a north-western county of Virginia, having an area of 646 sq. m. The surface is hilly, rough, and covered with large forests. The soil is well watered, and generally fertile. The Elk, Little Kanawha, and Holly, are the principal rivers. Stone-coal is found in several places, and in the northern part are salt springs. The productions in 1850 were 9,062 bushels of wheat, 137,120 of Indian corn, 4,856 of potatoes, 8,743 pounds of tobacco, and 72,409 of butter. There were 6 corn and flour mills, 4 sawmills, 2 wool-carding establishments, 1 salt-boiling establishment yielding 10,000 bush. per annum, and 2 churches. Value of real estate in 1850, \$495,647; in 1856, \$1,120,293; showing an increase of 125 per cent. The county was formed in 1836, and named in honor of Carter Braxton, one of the signers of the declaration of independence. Capital, Sutton. Pop. 4,212, of whom 89 are slaves.

BRAXTON, CARTER, a signer of the declaration of independence, born at Newington, King and Queen co., Virginia, Sept. 10, 1738, died Oct. 10, 1797. He inherited several plantations, and passed the early part of his life in the enjoyment of his fortune in his native state, and in England, where he resided some years. In 1765 he took an active part in the eventful session of the house of burgesses of Virginia, in which the resolutions of Patrick Henry were adopted, and in the subsequent assemblies which were dissolved by the governor. He was next a member of the conventions which were the first step toward the substitution of popular for the royal government; and on Dec. 15, 1775, was elected delegate to the continental congress, as successor of Peyton Randolph, and as such affixed his name to the declaration of independence. He did not remain long in congress, but served in the legislature of Virginia until 1786, when he became one of the executive council. The close of his life was embittered by pecuniary embarrassments, and the entire wreck of his fortune.

BRAY, VICAR OF, the vicar of a small parish of Berkshire, England, of this name, 23 miles from London. A clergyman who held this office in the 16th century, was a Roman Catholic in the reign of Henry VIII., became a Protestant with that monarch, and remained so during the reign of Edward VI., became a Catholic again in the reign of Mary, and turned Protestant again when Elizabeth ascended the throne of England. In this way he kept fast to his preferment through all the changes of his times. On being reproached with his frequent changes of principle, he made answer very wittily: "Not so, neither; for if I changed my re-

gion, I am sure I kept true to my principle, which is, to live and die the vicar of Bray!"

BRAY, ANNA ELIZA (KEMPE), an English authoress, distinguished for her artistic culture and for her literary attainments, born in Devonshire, in the latter part of the 18th century, married, 1818, Mr. Charles Stothard, whom she assisted in his antiquarian researches, and after his death became the wife of the Rev. Edward Atkyns Bray, vicar of Tavistock, where she now resides. Mrs. Bray's works (of which a uniform edition in 10 vols. appeared in 1844) consist chiefly of books of travel and historical romances, many of which have been translated into German. One of her most valuable productions is on the "Traditions and Legends of Devonshire," in a series of letters addressed to Southey. Mrs. Bray has written a memoir of her first husband, and, in 1851, that of his father, the eminent artist, Thomas Stothard.

BRAY, THOMAS, an English clergyman and philanthropist, born at Morton, in Shropshire, in 1656, died Feb. 15, 1736. He graduated at Oxford, and was selected by Bishop Compton, in 1696, to build up the infant Anglican church of Maryland. By way of securing a support during this service, it was proposed to have the judicial office of commissary general created, and conferred upon him by the government of Maryland, with a salary of £400 per annum. In company with Sir Thomas Lawrence, then secretary of Maryland, he waited on the princess of Denmark, afterward Queen Anne, and informed her of the proposed name of the new capital of Maryland, Annapolis. In return for the compliment, she gave a munificent donation for libraries in America, and £400 were given to the one in Annapolis. Beside these parochial libraries, he set on foot through England and Wales lending libraries in every denary, whence the neighboring clergy might borrow books, and where they might meet for mutual consultation. In 1697 he succeeded in forming a society for propagating Christian knowledge at home and abroad. He sailed for Maryland Dec. 16, 1699, and arrived March 12, 1700. He was received with great cordiality, and the "act of religion" was adopted by the legislature as he desired. On May 22, 1700, there was a general visitation of clergy at Annapolis, and under its resolves he returned to England in 1701. He afterward engaged in the reformation of prison abuses, the establishment of parish work-houses, and other benevolent undertakings.

BRAYBROOKE (RICHARD NEVILLE GIFFIN), Lord, editor of "Pepys's Diary," born at Stanlake, Ruscombe parish, Berkshire, Sept. 26, 1788, died at Audley End, Essex, March 13, 1858. He was educated at Cambridge, and published the "Private Correspondence of Jane, Lady Cornwallis, 1618 to 1644," and, in 1825, edited "The Diary of Samuel Pepys."

BRAZEN SEA, a curiously carved vessel constructed by Solomon, and set in the temple. It appears to have been an enlargement upon

the original laver of brass, which Moses constructed for the tabernacle, and to have been designed to serve only a part of the uses assigned to the more ancient utensil. The original laver was intended to serve the double purpose of washing the parts of the animal offered in sacrifice, and the hands and feet of the priests. In Solomon's structure, the first of these offices was discharged by the smaller lavers, while the ablutions of the priests were to be conducted in the brazen sea. This was a very large reservoir, made entirely of brass, and placed between the door and the altar of burnt offering. It was circular at the top and 30 feet in circumference, and square in the 8 lower of its 5 cubits in depth. It stood upon the backs of 12 oxen, 8 looking toward each quarter of the compass. In the 2d temple there was a return to the Mosaic plan of having only one laver; but we have no description of it.

BRAZIL, a vast empire of South America, extending from lat. $4^{\circ} 23'$ N. to $32^{\circ} 45'$ S., and from long. $84^{\circ} 56'$ to $73^{\circ} 20'$ W. It is of very irregular form; its greatest length from N. to S. being 2,540 miles, and its greatest breadth from E. to W. 2,630 miles; area about 3,000,000 sq. m. Its entire coast line, from the mouth of the Oyapok, which constitutes its northern boundary, to the Itahy, which forms its southern limit, is somewhat more than 3,700 miles. It is bounded N. by Guiana and Venezuela; N. E., E., and S. E. by the Atlantic ocean; S. by Uruguay; S. W. and W. by Uruguay, the states of the Argentine confederation, Paraguay, Bolivia, Peru, and Ecuador.—Unlike most of the other countries of South America, Brazil has no lofty mountains; several chains, of moderate height, traverse portions of its territory, particularly the eastern part. A chain of mountains of inconsiderable elevation separates it from Guiana and Ecuador on the north, and from Cape St. Roque to the borders of Uruguay one, and for a considerable portion of the distance, two ranges, of moderate height, run nearly parallel with the coast, and at a distance from it varying from 20 to 250 miles. These ranges culminate in the province of Minas Geraes, where there are several peaks, which attain nearly to the height of 6,000 feet. The Serro do Espinhaço is the inner or westernmost of these two ranges, and extends from lat. 15° to 23° S. It is about 250 miles from the coast, and its principal peaks are Piedade, 5,830 feet above the sea-level, and Itacolomi, some 80 feet lower. The N. E. part of the coast range bears the name of Serra dos Orgãos, from a fancied resemblance of its peaks to the pipes of an organ, while the S. W. portion is called the Serro do Mar. The highest point of this range is in the Serra dos Orgãos section, and bears the name of Morro dos Canudos; it is 4,476 feet high. The greater part of the range is only 20 or 25 miles from the coast. The coast itself is mostly low, or of very slight elevation, except that portion lying between lat. $21^{\circ} 40'$ and $27^{\circ} 35'$ S., which is rugged and mountainous. The water-

shed, which divides the sources of the Madeira from those of the La Plata, is but little elevated, and in time of flood, passages may be made by boat from one river into the other. North of this tract, and occupying almost the whole of the interior provinces of Matto Grosso, Grão Para, and Alto Amazonas, stretches a vast plain, or pampas, of an average elevation of 2,000 or 2,500 feet. The area of this plain is said to be more than 6 times that of France. Another table-land larger than France extends from the Serra Ibiapaba to the river Tocantins. The tract lying north of the Amazon, and formerly known as Portuguese Guiana, is mostly low and marshy.—The river system is by far the most magnificent in the world. The Amazon, and its numberless affluents, water all the northern portion of the empire; the Rio Francisco, which in any other country would be considered a river of the first class; the Maranhão, the Pamahiba and the Parahiba, the Parana and the Paraguay, affluents of the La Plata, are among its other great rivers. Several of the tributaries of the Amazon are themselves mighty rivers; such for instance as the Tocantins, the Araguay, the Madeira, the Chingua, the Tapajoz, the Purus, and the Rio Negro. All of these streams are navigable for great distances. The lakes are few in number; the largest is the Lagoa dos Patos, in the province of Rio Grande do Sul. It is 150 miles in length, and 35 in breadth, and is separated from the ocean by a narrow strip of land. Lagoa Grande, in the province of Goyaz, is smaller, but still of considerable size.—The climate, as a whole, is one of the finest in the world. Lying almost wholly in the southern hemisphere, the heats of summer are tempered by the sea-breezes, which, from the great preponderance of water in that hemisphere, are much cooler and more extensive in their sweep than in the northern. The provinces of the south have an almost insular climate, owing to the diminished breadth of the continent. The northern provinces are subject to violent and heavy storms; the southern provinces have comparatively little rain. The rainy season in the north sets in with heavy thunder-storms, in October, and more or less rain falls till March. The following table gives the mean temperature and range of the thermometer in 5 of the principal cities:

	S. lat.	Av. mean temp.	Av. max.	Av. min.
Rio Janeiro.....	22°	$73^{\circ} 80'$	80°	67°
Bahia.....	13°	80°	86°	74°
Pernambuco.....	$8^{\circ} 6'$	78°	86°	70°
Maranhão.....	$2^{\circ} 31'$	80°	85°	75°
Para.....	$1^{\circ} 21'$	84°	93°	73°

So small a range of the thermometer is found in very few countries, and indicates, except where marsh miasmata prevail, a climate of extraordinary salubrity.—That portion of Brazil lying on the Amazon and its principal tributaries, being often overflowed for some months, and having in addition a vast amount of constantly decaying vegetation, is subject to malignant intermittent and remittent fevers, which

attack especially the sarsaparilla hunters, who sleep on the damp earth in the forests, and otherwise expose themselves to the deadly influence of the malaria. Lieut. Herndon found the Indians of the interior away from the marshy lands remarkably long-lived.—Little definite information has ever been gathered respecting the geological formations of Brazil. Its vast northern territory is rarely traversed except upon its great rivers, and along these the deep alluvial deposits covered with the dense and almost impenetrable forests of the tropics, entirely conceal the rocky strata beneath; and where the regions back from the water courses have been explored for their mineral resources, it has been by those whose eyes were open only to the precious metals, or the more precious gems found in the same deposits. It is well known that granitic mountains range along the coast from the southern extremity of the country toward the north for perhaps 2,000 miles; and similar, nearly parallel, ranges succeed to these in the interior, between which the rivers and their branches flow in a northerly direction, the Parana and its branches alone leaving the elevated valleys among the mountains to seek the ocean by a southerly course. It is near the heads of these streams that the mines of gold and of precious stones are found, which have given to Brazil the reputation of possessing almost unbounded mineral wealth; and yet it is stated that the exports of sugar and coffee alone in the course of a year and a half have exceeded the whole product of the diamonds found in a period of 80 years. The diamonds are found in the same deposits with the gold, and are obtained, as will be more particularly noted in the article DIAMOND, by the same method of washing that is everywhere adopted for collecting the deposit gold. The most famous localities are those of the province of Minas Geraes, N. N. W. from Rio Janeiro, and of the more distant province of Matto Grosso in the central regions of Brazil. These districts contain the same geological formations which prevail in all gold-producing regions. Though their range must be of great extent, they appear to have diminished in importance as the superficial deposits have been exhausted of their most available products; and the yield of gold is now stated to have fallen off to about one-fourth of what it was in the latter quarter of the last century. The annual yield of diamonds was estimated at the beginning of 1858 at 12,000 to 13,000 oitava (eighth part of an ounce). About 6,000 oitava came from Santa Isabel in Bahia, and are known as the diamonds of Cincora, after the parish of this name, within the boundary of which they were discovered in 1844. About 4,000 oitava are found in the Rio San Antonio, Rio de Peixe, Riberão do Inferno, Rio de Jequitinhonha, Rio de Itambé, Rio Manso, the eastern affluents of the Rio das Velhas, Rio de Parauna, and in the Rio Sipo. The remaining 2,000 to 3,000 oitava are found in the provinces

of Goyaz, Ouyaba, Matto Grosso, and Minas Geraes, and in various other places, but chiefly within the territory of the Rio de Bagage, where the famous diamond, *Estrella do sul*, has been found. The diamonds of Cincora are the most inferior. The best diamonds are those found in the Rio de Jequitinhonha, Riberão do Inferno, and in the Rio Sipo, although in the latter river the produce is very limited; those of the Rio Antonio, Rio de Peixe, and Rio de Itambé, are also of fine quality, but exceedingly small and scarce. The diamonds of the province of Matto Grosso are also small, but of the purest water, and are distinguished in their primitive condition by a lustre which exceeds in brilliancy all other diamonds of Brazil. The value of diamonds is extremely subject to fluctuation, and is as violently affected by political events as the public stocks in Paris or Madrid. A few years ago, when slaves could be bought at low prices, and corn was cheap, the cost of an oitava of diamonds hardly exceeded about \$111, but with the present high prices of labor and of food, it would be at least \$150. In times of prosperity the trade in diamonds yields enormous profit. The *Estrella do sul* diamond, which weighs 14 oitava, brought about \$180,000; the present owner, however, who has spent \$2,000 more upon it, finds difficulty in obtaining a purchaser. Other minerals, which will prove of greater permanent value to Brazil, are found in the gold districts; among these, iron ores are described as very abundant, and of excellent qualities. They appear, from the descriptions, to be hematites and specular ores, such as occur in the same class of rocks along the range of the Alleghanies. Limestone is often spoken of, and could hardly fail to be found in the same group, and also in the other formations that are known in other parts of the country. The numerous caves which have excited interest by the osseous remains found in them are in this rock. Mineral coal of the regular coal formation is not likely to be met with; but various localities furnish inferior qualities belonging to later formations. In "Gardner's Travels in the Interior of Brazil" (London, 1846), the existence of a bed of lignite is mentioned near Crato, 300 miles west from Pernambuco, and the rocks of the chalk formation are described as extending over an immense area. But between the rocks of the cretaceous series, and the oldest stratified formations, the author discovered no traces either of the carboniferous or the oolite formations. In Santa Catarina, in the southern part of Brazil, Dr. Perigot, who was employed by the government to make geological explorations, reports, in 1841, the existence of coal beds of considerable extent, the formation extending 20 to 30 miles in breadth, and about 800 miles in a N. and S. direction. Salt mines of considerable extent are found in several districts of the country, and furnish an important branch of manufacture.—There are no deserts. The vast surface, of which scarce the 150th part has been sub-

jected to cultivation, is covered with a rich and productive loam, and in the wilds of the interior the luxuriance and beauty of the forest vegetation are unparalleled, unless it be by the forests of the Malayan isles. Much of the vegetation, too, is of great commercial value. The *siphonia elastica* and the other trees which yield the caoutchouc of commerce; the Brazil wood, one of the most valuable of the vegetable dyes; the annatto; the bertholletia, which produces the Brazil nuts of commerce; the cocconut palm, the mahogany, the rosewood, the granadilla, the fustic, the Brazilian ivy, and a great variety of other ornamental woods and dye-stuffs, render the forests a source of wealth to the empire. To these productions of the forest must be added the sarsaparilla, of which large quantities are exported to Europe and the United States; vanilla, ipecacuanha, copal, cloves, cinnamon, tamarinds, cinchona, and cacao, the nut of which furnishes chocolate. The bamboo of Brazil stands next to those of China for serviceable qualities. Several of the forest trees have leaves of a fibrous character, suitable for the manufacture of cordage. The *bombax ceiba*, or tree cotton, produces a silky cotton, which if gathered and manufactured would furnish fabrics of great beauty. The principal fruits are the pineapple, the banana, the orange, the maracuja or fruit of the passion flower, the mango, the custard apple, the guava, the cashew, the rose apple, the melon, and the water-melon. The agricultural products are maize, wheat, beans, rice, and cassava root, among the farinaceous plants; coffee, of which Brazil furnishes nearly one-half of the entire product of the world; sugar, tobacco, cotton, cacao, and to a limited extent, tea. Tea is raised chiefly in the province of Rio de Janeiro and of San Paulo. Minas Geraes produces 15,000 to 20,000 lbs. of tea, which is superior to that of the province of San Paulo. A species of tea, called *herba-matte*, is cultivated in the province of Parana. The coffee received from Brazilian ports in the United States alone, during the year ending June 30, 1856, was over 180,000,000 pounds, and the value was \$16,091,714. During the same period in 1857 it was 197,224,922 pounds, and the value was \$17,981,426. In 1854 the export of coffee to Europe amounted to \$20,000,000. The same year the total export of sugar was 256,510,016 lbs.—The fauna of Brazil is unrivalled, in variety and extent, by any country of the western continent. It differs, however, materially from that of the adjacent countries. None of the llama family are found here. Monkeys seem to find their paradise in this country. Nowhere are they so numerous or of so many species and varieties. The most remarkable species, perhaps, is the coati, a bearded monkey, with a remarkable resemblance to man in his countenance, and whose body is covered with a black and glossy fur. Among the carnivora, the jaguar, the ounce, the fox, the tiger cat, hyena, saratus, and wolf, are the principal animals. The tapir and

the peocary are the only pachyderms, and are less in size than their East Indian congeners. The porcupine, capibara or water-hog, armadillo, sloth, and ant-eater, are among the more remarkable quadrupeds. Several species of deer are found in the forests. In the elevated plains, immense herds of wild cattle and wild horses roam, and are slaughtered mainly for their hides. The most remarkable feature of animal life in Brazil, is the variety and beauty of its feathered tribes. The ouira, whose plumage is variegated like that of the guinea fowl, exceeds the condor in strength and size; the salian seems a cross between the ostrich and stork, and runs with incredible swiftness; the aral, with its plumage of blue and scarlet, and the candidi, with adornings of blue and gold, are not surpassed in beauty by any birds on the western continent. The humming birds, of which there are many varieties, glitter like gems amid the gorgeous flora; the parrots and parroquets, emus or American ostriches, pigeons of numerous varieties, toucans, fly-catchers, tanagers, cuckoos, jackass birds, and a thousand others, make the forests vocal with their songs, or brilliant with their plumage. Nor is the country less prolific in insect life. The butterflies of Brazil are renowned for their brilliant and varied hues, and the attempt was actually made, and with considerable success, some years since, by an eccentric naturalist, to illustrate the flora of the country, by imitating the flowers with the wings of its butterflies. Many of the insects of the country are destructive, and some are annoying and venomous. The ants are perhaps the most formidable of all; the large red ant, which varies in length from a quarter of an inch to an inch, inflicts a painful bite, but is mainly a vegetable eater, and renders some districts almost barren by its ravages; it is particularly fond of the mandioc or cassava root, which is the staple food of the poorer classes. It has a fierce and determined foe in the small black ant, which is carnivorous, and, though very small, makes fearful havoc in the ranks of its antagonist. The acarua, the pium, a kind of tick, the mutuca, a large and troublesome fly, the maricumum, a minute but venomous insect, the carapata and the mucococa, are among the other insect plagues of the country; wasps, bees, and hornets also abound. The rivers and sea-coast are abundantly stocked with fish, and turtles of all sizes are so numerous, that a thriving business is transacted along the Amazon in extracting the oil from their eggs. Among the serpents of Brazil, the rattle-snake, the coral or corral snake, the surrucucu, and the jararaca, are the most venomous; while, in the forests, the anaconda and boa constrictor coil themselves on the boughs of the trees, and with sudden spring, embrace in their deadly coils the luckless animals which pass below. The alligator abounds in the rivers. Lizards are also found in great numbers, and of numerous species. Along the coast the sperm whale, the manatee or sea-cow, the porpoise, and

other monsters of the deep, may be seen disporting in the flood.—The following table gives, it is believed, as nearly as possible, the actual population and extent of the provinces of the empire in 1858:

Provincia.	Area, sq. m.	Population, 1858.	Pop. to sq. m.	Capital.	Pop. in 1861.
North-East.					
Grão Para....	582,000	290,000	0.38	Bolem,	14,000
Maranhão.....	94,000	290,000	3.09	S. Luis de Maranhão,	38,000
Piauí.....	92,000	190,000	1.41	Oeiras,	6,000
Ceará.....	42,800	210,000	5	Portaleza,	6,000
Rio Grande do Norte.....	28,900	170,000	5.9	Natal,	12,000
East.					
Parahiba.....	21,700	230,000	10.14	Parahiba,	16,000
Pernambuco.....	89,900	940,000	38.55	Recife,	22,000
Alagoas.....	15,000	224,000	17.7	Maceio,	8,000
Sergipe del Rei.....	14,300	190,000	11.11	Sergipe,	13,000
South-East.					
Bahia.....	154,700	830,000	6.14	S. Salvador,	118,000
Espírito Santo.....	23,000	70,000	3.04	Vitoria,	5,000
Rio de Janeiro.....	81,800	900,000	36.8	Niteroy,	18,000
São Paulo.....	89,000	890,000	4.75	São Paulo,	7,000
Curitiba.....	77,600	156,000	9.01	Curitiba,	12,000
Santa Catarina.....	38,500	102,000	3	Desterro,	6,000
Rio Grande do Sul.....	96,900	235,000	2.9	Porto Allegre,	12,000
Interior.					
Alto Amazonas.....	550,000	112,000	.30	Barra,	6,000
Minas Geraes.....	328,500	1,300,000	5.81	Ouro Preto,	16,000
Matto Grosso.....	408,500	100,000	.24	Curaba,	15,000
Paraná.....	94,700	60,000	.64	Nuranda,	1,000
Goyaz.....	812,000	130,000	.39	Goyaz,	8,000
Total.....	2,973,400	7,121,000	9.36	Rio Janeiro,	300,000

We subjoin, also, the statistics of the population in 1856, which, however, although drawn up by order of the government, are not generally considered accurate:

Grão Para.....	307,400
Maranhão.....	380,000
Piauí.....	180,400
Ceará.....	335,300
Rio Grande do Norte.....	190,000
Parahiba.....	209,800
Pernambuco.....	950,000
Alagoas.....	304,300
Sergipe del Rei.....	138,000
Bahia.....	1,100,000
Espírito Santo.....	51,200
Rio de Janeiro.....	1,200,000
São Paulo.....	500,000
Santa Catarina.....	105,000
Rio Grande do Sul.....	201,300
Minas Geraes.....	1,300,000
Matto Grosso.....	85,000
Goyaz.....	180,000
Alto Amazonas.....	42,600
Paraná.....	73,400
Pop. in 1856.....	7,677,800

Of this population it is estimated that 2,000,000 are whites, 1,121,000 mixed free people (mulattoes, mestizoes, &c.), 800,000 civilized Indians, 600,000 mixed slave population, and 2,000,000 blacks, or African slaves. The estimates of the free mixed races and of the Indians are only approximations, and may be inaccurate. The different classes of the Brazilian population merit, perhaps, a fuller description. At the discovery of the country by the Dutch and Portuguese adventurers, it possessed probably not far from 2,000,000 inhabitants, be-

longing to a great number of tribes, and speaking different languages. The Indian of the Amazon could not understand the Indian of the Franciscan, nor could either comprehend the language of the Indians of the interior. It is stated by Hervas that there were 150 different languages spoken in the limits of the present empire. Great numbers of these Indians were reduced to slavery by the Portuguese, but they found them, for the most part, unprofitable slaves, and accordingly they imported negroes from their African possessions. The inhabitants now consist of: 1, Europeans, a large proportion of whom are Portuguese, though France and Germany have, of late years, contributed a fair share; 2, white persons born in the country, and who call themselves Brazilians; 3, mulattoes, embracing all the shades of color, in persons descended from the white and negro races; 4, mamalucoes, the descendants of whites and Indians; 5, cabocloes, or domesticated Indians; 6, wild Indians; 7, free negroes born in Brazil; 8, manumitted Africans; 9, mestizoes, or sambos, a mixed race between Indians and negroes. The Brazilians are generally a temperate people, and attain a good degree of longevity; but the climate hastens female development, and produces the early decay of the beauty of the sex. The Brazilian ladies are skilful and devoted players of the mandoline, and passionately fond of music generally, and of dancing the voluptuous *Batuca* and light contradances. The ladies of the higher classes are rarely seen in public. The tendency generally is toward exclusiveness, and women are not in the habit of making their appearance in the presence of strangers. The jealousy of the men is great, and the Brazilian hearthstone is guarded almost with oriental vigilance. Slavery in Brazil, though often attended with circumstances of individual hardship, has not produced the distinctions of caste which attend it in most other countries. The laws of the country render manumission easy; and once emancipated, the negro finds every calling and office as fully open to him as to the white. In the army or navy, in commerce, agriculture, or manufactures, in social or political position, color is no barrier to the highest success. It results from this, that the danger of insurrection does not exist; the humblest slave looks forward with hope, not only to future freedom, but to wealth and power. Within the past few years vigorous efforts have been made by the government, in connection with England and France, to put a stop to the slave trade, and with considerable success.—The established religion of the empire is Roman Catholic, but others are tolerated. The patronage of the church is in the hands of the crown and the bishops. The Jesuits exerted, in the early history of the country, a very favorable influence on the native inhabitants. They labored unweariedly to communicate instruction, and to improve their condition, and with some success.—Theoretically very

liberal provisions are made for the education of the masses; but there are great practical defects in the carrying out of the plans adopted. By law, a schoolmaster for boys and a schoolmistress for girls must be maintained in every parish, and a lyceum in every considerable town. In the smaller towns, Latin, French, and philosophy, or rhetoric, are taught in these lyceums. In the larger towns, in addition to these branches, instruction is given in the English language, in geography, mathematics, natural philosophy, and chemistry. There are universities for jurisprudence at San Paulo and Pernambuco, academies of medicine at Rio Janeiro and Bahia, and several theological seminaries. A new institution of learning, after the plan of the German universities, is projected by the government; and for the furtherance of this object, several young Brazilian scholars were sent on a tour of investigation to continental Europe, especially to Germany, in the early part of 1857. At Olinda and San Paulo, there are professors of civil and common law, political economy, and social science; at Bahia, of medicine, surgery, zoology, mineralogy, botany, chemistry, and physics. At Rio Janeiro there are the same professorships as at Bahia, and in addition, chairs of mathematics, and military and civil engineering. The public schools are all free; but a preference is given to the private schools by a large number of persons. There were, in 1857, 20 lyceums, 2 mercantile academies, 148 grammar schools with 8,713 pupils, and 1,506 primary schools with 61,700; beside the pupils who attend private schools. The educated Brazilians have, very generally, a strong predilection for the natural sciences, and several of them have attained to eminence in their investigations. The modern literature of Portugal is but scanty, but some of the finest contributions to it have been from the pens of natives of Brazil. The tendency in Brazil, however, is to prefer the English and French schools of literature to that of the mother country. The present emperor is a zealous patron of literature, science, and the fine arts, and great activity is beginning to be manifested in all spheres of culture and learning. The press is free, and there are about 100 political and literary journals and periodicals published in Brazil. One, and in some cases more, political journals are published in all the towns; but the principal political papers are those issued at Rio, of which the *Jornal do Comercio*, the *Jornal do Rio*, the *Diario do Rio de Janeiro*, and the *Correio Mercantil*, are the most important. The public library of Rio Janeiro contains about 100,000 volumes. The imperial and the Benedictine libraries at Rio, and the libraries of Bahia and San Paulo, contain additional and large collections of books. There are also at Rio Portuguese, English, French, and German private libraries. The principal learned bodies are the imperial historico-geographical society of Rio, and the academy of fine arts and

geological society in the same city.—The government of Brazil is a hereditary, limited, and constitutional monarchy, sharing with the general assembly the law-making power. The succession to the crown is in the heirs of Don Pedro, the reigning emperor, and these failing, a new dynasty is to be chosen by the general assembly, during the lifetime of the last of the race. This new dynasty must be a native one, the accession to the throne being prohibited to foreigners. The assembly consists of a senate and chamber of deputies, the former chosen for life, the latter for 4 years. Both are chosen by electors, who represent every 15 families, and are themselves elected by voters, who, in order to enjoy the elective franchise, must be worth \$50 of annual income. Each province has also a provincial assembly, elected in some provinces for 2, and others for 3 years. The judiciary consists of the *Relações*, of which there are 4, each consisting of 8 judges; and the supreme tribunal of justice, consisting of 12 judges. The judges are only removable by impeachment. Freedom of the press, the liberty of the subject, the private rights of the individual, and the trial by jury, are all guaranteed by the constitution. The revenues of the empire are mainly derived from duties, which are laid on all commodities imported or exported. The export duty is levied on the cost of the article at the port where it is shipped, and not on the original cost of production. The debt of the empire is now about \$65,000,000 (consisting of a 5½ per cent. English loan of £5,500,000 sterling, of a Portuguese loan, and of 6, 5, and 4 per cent. Brazilian loans); in 1850 it was \$82,000,000. Up to 1853 there had been for many years an annual deficit in the receipts of the treasury, as compared with the expenditures; but a wiser policy has since prevailed, the tariff has been remodeled, and a new impulse has been given to commerce, so that for the last 3 years there has been a moderate surplus in the treasury. The revenue of 1853-'4 was about \$17,000,000, the expenditures \$15,285,000; in 1857-'8 the revenue and expenditures were about \$17,500,000, and the estimates for 1858-'9 are \$19,500,000 for revenue, and \$18,100,000 for expenditures. The standing army in 1856 was 22,540; in 1857-'8, 18,500 men for ordinary, and 20,000 for extraordinary times; beside the national guard, a species of militia whose officers are thoroughly drilled, and one-third of the rank and file are liable to be called into service, in case of invasion. This national guard consists of 106,880 men. The navy, in 1857, consisted of 43 ships in active service, 10 in ordinary, and 29 gunboats. The 43 ships in active service, of which 15 were steamboats, were manned by 3,835 seamen and marines. The total naval force (1858) consists of 4,600 men, and several new boats are now in course of construction. The circulating medium of Brazil consists of the bills of the bank of Brazil and of the government paper money. The circulation of the

precious metals also begins to increase. Beside the bank of Brazil, there are now several private banks in Rio Janeiro. The bank of Brazil has branches at Bahia, Pernambuco, San Paulo, Maranhão, and Rio Grande do Sul. Bahia, moreover, has 2 private banks, and the last-named cities have each a private bank.—The exports of the year 1853-'4 amounted to \$40,865,958, and the imports of the same year to \$45,972,667. Each year of late has witnessed a remarkable increase in the exports and imports of the empire; and England and the United States have, thus far, kept pace with each other in their demand for Brazilian products. In 1854 the amount exported to each was about \$11,000,000. In 1856 the exports to the United States had risen to \$19,262,657, and those to England to probably a nearly equal amount. Total amount of exports in 1856, \$55,000,000. The exports to France in 1854 were \$8,350,000. The exports from Brazil to Great Britain were as follows:

From Jan. 1 to May 1, 1857.	From Jan. 1 to May 1, 1858.
Cotton, cwt. 108,566	51,820
Wet Hides, no. 16,040	9,020
Coffee, pounds. 104,952	1,472,084
Sugar, cwt. 194,240	287,924

The following was the value of some of the principal items of export to the U. S., in 1856:

Coffee. \$16,091,714	Hair. \$188,943
Sugar. 513,458	Rosewood. 81,469
Raw hides. 1,890,228	Brazil wood. 82,095
India rubber. 771,826	Brazil nuts. 48,073

The imports from the U. S., are mainly of flour, cotton goods, lumber manufactured, bacon and lard, naval stores, household furniture, India rubber goods, &c. The enormous increase of the commerce between the United States and Brazil, may be gathered from the fact that the exports from Brazil to the United States have risen from \$605,126 in 1821 to \$21,460,738 in 1857, and the exports from the United States to Brazil from \$1,881,760 in 1821 to \$5,545,207 in 1857. The imports from Great Britain for the first 3 months of 1857 amounted to \$6,400,000 and for the same period of 1858 to \$4,100,000. The soundness of the general financial condition of the country was made evident during the commercial panic in the latter part of 1857, when Brazil stood firm, while almost all other countries were drawn into the vortex of the crisis.—Brazil was first discovered by Europeans in January, 1500, by Vincente Yanez Pinçon, a companion of Columbus, who landed at Cape St. Augustin, and took possession of the country in the name of the king of Castile. Its more complete discovery is, however, due to Pedro Alvarez de Cabral, a Portuguese navigator, who, in April of the same year, sailed for many days along the coast, and finally landed at Cabralia, lat. 16° 30' S., which he named Porto Seguro (safe harbor), and where, with imposing ceremonies, he took possession of the whole country in the name of the king of Portugal, giving it the name of Terra de Santa Cruz. Spain never urged her claims to the country, and the Portuguese established a colony on the coast in 1504, and subsequently others at different points. As,

however, the home government had no suspicion of the mineral wealth of Brazil, these colonies were suffered to languish till 1549, when, it being found that the natives possessed gold ornaments, the presence of gold in the beds of the rivers was suspected, and the country was regarded with more interest by the court. In this year Bahia, or San Salvador, was founded. About 1555, Villegagnon, a knight of Malta, ambitious of founding a colony in Brazil, applied to Admiral de Coligni to interest Henry II., of France, in behalf of the enterprise, alleging that it would furnish a safe retreat for the Huguenots, then bitterly persecuted by the Catholics. Coligni accordingly procured permission and furnished assistance and colonists, and nearly 10,000 emigrated within the next 2 years, and founded the city of Rio Janeiro. No sooner, however, was the colony established, than Villegagnon threw off the mask, and, by his perfidy and cruelty, drove them back to Europe. His treachery was soon visited on his own head, for 4 years later he, and the few colonists who remained with him, were driven from the country by the Portuguese. Subsequently, in the latter part of the 16th, and the beginning of the 17th century, the English, then at war with Spain and Portugal, attacked and plundered the cities on the Brazilian coast. The Netherlands too, then waging war against Spain, attacked and captured San Salvador, in 1624, obtaining an immense booty. As the war continued, they subsequently conquered Pernambuco in 1680, and in 1683-'4-'5 and '6, reduced nearly the whole of the Portuguese settlements in northern Brazil, and established Dutch colonies in their place. Here, though often menaced with extermination, they maintained an unstable footing till 1654, when, by Portuguese treachery, they were driven out. After that time, with only some trifling conflicts with the English and French, the Portuguese remained undisturbed masters of the country until the revolution of 1822. In 1808, John VI., then prince regent of Portugal, perceiving that that kingdom must inevitably fall into the hands of Napoleon, made his escape to Brazil, and finding the government of the country in a most disjointed state, commenced such reforms and granted such privileges as restored unanimity of feeling, and increased the prosperity of the country. Brazil was to be entitled to the same privileges as the mother country; and in 1815, John VI. was crowned monarch of the united kingdom of Portugal, Brazil, and Algarve. In 1819, assisted by the English, Brazil recovered possession of Portuguese Guiana. In 1821, the cortes of Portugal recalled John VI., who appointed his son, Don Pedro, regent, and sailed for Portugal. In Oct. 1822, the Brazilians, provoked by the impolitic and oppressive acts of the Portuguese cortes, proclaimed their independence, and organizing the empire of Brazil, conferred the imperial crown on Don Pedro, under the title of Pedro I., who abdicated April 7, 1831, in favor of his son,

then a child 5 years old, the government being conducted during his minority by a regency, appointed by the Brazilians themselves. In July, 1841, Pedro II. was crowned emperor of Brazil. His sister married the prince de Joinville in 1843. Under the spirited administration of the emperor, Brazil is advancing rapidly. The government made extensive grants of land, under condition that 100,000 immigrants shall settle upon it before 1862. The principal German colonies are at San Leopoldo (Rio Grande do Sul), Donna Francisca and Blumenau (Santa Catarina), Porto Allegro (Rio Grande do Sul), Caravellas (Esperitu Santo), Petropolis, and Fribourg (Rio de Janeiro). The 2 latter colonies contain, respectively, a population of 8,000 Germans and Swiss, noted for their prosperity and wealth. San Leopoldo is a thriving German colony, with a population of 10,000, which exported in 1854 produce to the value of \$800,000. There are 6 colonies in the province of San Paulo: Superagui, Santa Cruz, San Domingo, Toires, Teo Forquilles, and Novo Mundo, containing an aggregate population of 40,000 Germans, Swiss, Portuguese, Galicians, and natives of the Azore Islands. Mucury is a colony in course of development in the province of Minas Geraes. In all there are about 50 foreign colonies, with a population of about 60,000. The increase in the German population has called into existence a direct postal communication, by treaty of Aug. 13, 1857, the mail being carried by the new Hamburg Brazilian steamboat company. Beside the steamboats to the principal European ports, there have been, since 1838, 2 steamboats on the coast between the capital and Para and Rio Grande do Sul, and smaller ports. A new company was formed in 1852, for the steamboat navigation of the Amazon and of its 2 tributary rivers, the Tocantins and Rio Negro, and a new line projected to go from Rio to Montevideo and Buenos Ayres, thence ascending the Parana and Paraguay, to the province of Matto Grosso, is in active operation as far as Montevideo. Public roads are to be laid out, and leased to companies, in the same manner as the railways. Bridges begin also to receive a fair share of public attention, and a new and beautiful bridge (with 4 iron pillars and iron railing) on the Parahiba was inaugurated Dec. 13, 1857, thus saving the immense loss of time which was heretofore entailed by the uncertain and tedious crossing by the ferry boats. Four great railway lines are projected and partly in course of construction, named the Rio Janeiro or Pedro II. railway, the San Paulo, the Bahia, and the Pernambuco railway. The cost of the first is estimated at \$23,000,000, the government guaranteeing a dividend of 5 per cent. for 33 years, the province of Rio de Janeiro an additional dividend of 2 per cent., the privilege of the company extending over 90 years. This line is to pass through the province of Rio de Janeiro, and to unite by two branches the fron-

tiers of the provinces of Minas Geraes and of San Paulo. It was inaugurated with great solemnity on March 29, 1858, the portion completed being to the extent of about 40 miles. In 1857 a law was passed authorizing the government to contract a loan to the extent of one-third of the capital required for each of the 4 great railways, and in May, 1858, it was announced in London that a 4½ per cent. loan of £1,500,000 had been concluded by the Brazilian government with the house of Rothschild, the money to be applied to the completion of the Pedro II. railroad. The portion of that line completed was built by an English engineer. The remaining sections are in charge of Col. Garnett, an American engineer. The Pernambuco railroad is finished as far as Cabo, and the Bahia railroad is expected to be finished in 1858, while the other lines are prosecuted with great activity. In addition to these 4 great lines, a small local railway, from Mauá to Petropolis, has been for some time past in active operation, and there are 2 small railways, built by private companies, namely, from Porto las Caixas to Cantagollo, and from Niterohi to Campos. The capital, Rio Janeiro, is the largest and one of the finest cities of South America. The harbor is excellent and well defended. The other principal seaports are San Salvador or Bahia, Sergipe del Rey, Pernambuco or Recife, Parahiba, Para, Natal, Maranhão, Niterohi, Porto Allegre. Diamantina (formerly Tejuco), one of the most important inland towns of Brazil, is famous for its trade in diamonds. In the interior, Goyaz, Ouyaba, Curitiba, Ouro Preto, Egas, and Barra are the largest towns. —(See Southey's "History of Brazil;" Henderson's "History of Brazil;" Kidder and Fletcher's "Brazil and the Brazilians" (Philadelphia, 1857); Edwards's "Voyage up the Amazon;" Ewbank's "Brazil;" Herndon and Gibbons's "Tour of Exploration of the Amazon River.")

BRAZIL NUTS, the fruit of the *Bertholletia excelsa*, a large tree of the order *lecythidaceae*, found on the Orinoco. The nuts are of the form of triangular prisms, with very hard shells; and contain a rich oily meat in one piece like an almond. They are arranged in 4 cells, each of which contains 6 or 8 nuts, and all are included in a spherical case, as large as a man's head. The Portuguese formerly carried on an extensive trade in these nuts. They are now chiefly exported from Para, and continue to form an article of great commercial importance. When fresh, they are highly esteemed for their rich flavor; but they become rancid in a short time from the great quantity of oil they contain. This has been largely extracted to be consumed in lamps.

BRAZIL WOOD, the name given to several varieties of red dye wood, brought from South America, Central America, and the West India islands. The genuine Brazil wood, sometimes called Pernambuco wood, is brought from the province of this name in Brazil. The tree is known as the *caesalpinia crista*. Other varieties are the *braziletto* (the most inferior kind

of Brazil wood), from the West Indies, the product of the *C. brasiliensis*; the *sapan*, or sampen wood of the *C. sapan*; and the Nicaragua or peach wood, also from a species of *caesalpinia*. It is said that the name was applied to the wood (of which there are species in the East Indies), long before the discovery of America, and that the great territory in South America was named Brazil in consequence of the abundance of the *caesalpinia* trees. So valuable were these regarded, that the wood was monopolized by the crown, and called *Pao da rainha*, queen's wood. The tree grows to a large size, is crooked and knotty, bears fragrant red flowers and small leaves. The wood is heavy and hard, takes a fine polish, and sinks in water. When first cut, it is pale, but the red color deepens on exposure. The heaviest qualities are preferred. By boiling Brazil wood, reduced to powder, in water, the wood becomes black, while the water receives the red coloring principle, which is a crystallizable substance, named brazilin. Long-continued boiling extracts it all; but a deeper red is imparted to alcohol or ammonia. The dye is improved by standing a few weeks, even if it ferments. At the best, however, it is not permanent; the colors are fixed only by a preparation of the articles to be dyed, which consists in impregnating them with suitable mordants, as alum and tartrate of potash. Acids and alkalis affect differently the shades of color of the dye; the former making it more yellow and permanent, and the latter deepening the hue to purple and violet shades. Brazil wood is somewhat superseded of late years by a dye wood of superior quality, called camwood, supposed to be the product of the *bakia nitida*. It grows in Africa, and is obtained at Sierra Leone. It was formerly supposed that there were some medicinal properties in Brazil wood; it was observed to have a sweet taste, and to stain the saliva red, and it was made an ingredient in some prescriptions. It is now used in pharmacy only to color tinctures. Red ink is prepared from it by boiling the wood in water, and adding a little gum and alum; it is also used to make a lake-red paint. Paper saturated with it is used in chemical analyses as a test for sulphurous acid, by which it is bleached; also for fluorine, which turns it yellow.

BRAZING, the uniting of two pieces of metal, as of brass or copper, or one piece of each, by hard solder. Hard solder is distinguished from soft by being made of metals that require a higher temperature to melt them; but all solders should melt more easily than the metals they unite; and to give the maximum of strength, they should have about the same hardness and malleability as these metals. For brass, copper, iron, German silver, &c., the solder used is an alloy of zinc and copper in equal parts, or for a harder mixture, 2 parts of zinc to 3 of copper. The 2 surfaces to be united are to be made perfectly clean and bright; they are then brought together and se-

cured with wire, or otherwise, in their place, and covered around their edges with the granulated solder, mixed with powdered borax and wet with water. The parts are then heated; the borax melts, and runs over the bright surfaces, protecting them from oxidation; and as the heat increases, it fluxes the solder, and this suddenly flashes, or runs through the joints, uniting with the 2 surfaces, and making with them one piece, as the parts cool, and the solder sets. The pieces are then dressed with the file. It is sometimes convenient to cover the joints and the solder before heating with a clay lute; this is done in soldering iron, to prevent a scale of iron forming on the surface. The borax may be first melted and run into glass of borax, or allowed to froth up upon the joints.

BRAZORIA, a south-eastern county of Texas, bordering on the gulf of Mexico, and comprising an area of about 1,330 sq. m. It is watered by Brazos and San Bernard rivers, and by a number of small bayous setting up from the coast. It has a level surface, one-half of which is covered with magnificent and highly valuable oak forests, while the remainder is occupied by prairies. The soil is red, deep, and very productive. The climate is healthy on the coast, but in the interior and along the water courses, chills and fevers are prevalent at certain seasons of the year. The staples are sugar, cotton, and Indian corn. In 1850, the productions amounted to 4,811 bhd. of sugar (more than was yielded by any other county in the state), 3,531 bales of cotton, 213,525 bushels of Indian corn, and 78,100 of sweet potatoes. In 1857, there were in the county 53,456 head of cattle, valued at \$271,000, and 3,993 horses, valued at \$165,740; the value of real estate was \$1,814,260, and the aggregate value of all taxable property, \$4,649,613. Capital, Brazoria. Pop. in 1856, 6,696, of whom 4,029 were slaves; slave pop. in 1857, 4,188.

BRAZOS, a central county of Texas, named from Brazos river, which forms its southern and western boundary, bordered on the east by Navasoto river, which joins the Brazos at the southern extremity of the county, and comprising an area of about 585 sq. m. It has an undulating surface, about one-half of which is covered with a growth of oak and other timber. A great deal of the soil is rich loam, producing grain, cotton, and pasturage. The Houston and Texas Central railroad, when completed, will pass through the county. In 1850, it yielded 15,984 bushels of Indian corn, 142 bales of cotton, and 8,096 lbs. of butter. There were 75 pupils attending public schools. In 1857 the county contained 17,114 head of cattle, valued at \$117,700, and 1,150 horses, valued at \$65,500. The value of real estate was \$360,100, and the aggregate value of all taxable property, \$773,710. Capital, Boonville. Pop. in 1856, 1,347, of whom 487 were slaves; slave pop. in 1857, 519.

BRAZOS, or **BRAZOS DE DIOS**, a river of Texas, the largest in the state, excepting the Colorado.

It rises in the Guadalupe mountains, near lat. 33° N., and flows into the gulf of Mexico, about 40 miles S. W. of Galveston. Its whole length is estimated at over 900 miles; the direct line from its source to its mouth, at 500 miles. During the spring or rainy season, steamboats can pass up to Washington, 800 miles from its mouth, and they can always go up to Columbia, about 40 miles. For 500 miles from the gulf, its width varies from 200 to 150 yards.

BRAZOS SANTIAGO, a village 80 miles E. of Brownsville, on the northern bank of the Rio Grande, in Cameron county, Texas. The battles of Palo Alto and Resaca de la Palma, in 1846, were fought about half way between Brazos and Matamoras.

BRAZZA, an island of the Adriatic, in the Austrian province of Dalmatia, circle of Spalato, near the coast, 8 miles south of Spalato; area about 170 sq. m., pop. about 15,000, with 20 villages.

BREACH, in fortification, a gap or a wall made by the artillery or mines of the besiegers preparatory to an assault upon the place.

BREAD. Bread may be made of the meal of any of the cereal grains; but as wheaten flour is generally used for that purpose, and makes the most perfect bread, we shall speak mainly of that kind. Bread is either unleavened or leavened. When flour is mixed with water into a thick paste, and being flattened out, if submitted in an oven to a temperature of 212° F., until thoroughly dried, it forms a dense and more or less hard cake, in which, except that a portion of the starch is rendered more soluble by the heat, no chemical change has taken place. From the small quantity of moisture it contains such bread can be kept good for a long time. It forms the passover or unleavened bread of the Jews. In the form of oaten or barley cakes, it is still largely used by the peasantry of Scotland and Ireland. As sea biscuit, or pilot and navy biscuit, &c., it is an article of extensive consumption. When flour is mixed in due proportions with water, and some ferment is added, a moderate degree of heat being maintained, the dough thus formed rises and increases in bulk; this, when baked, constitutes leavened bread. The chemical changes which take place in the process of bread-making are curious and interesting. According to Mitscherlich, flour made from fresh sound wheat contains no sugar; but in the presence of water a minute proportion of the starch is quickly converted into grape sugar. By the addition of ferment, hop yeast being generally used, this is further increased at the expense of the starch in the process of fermentation, and grape sugar is converted into alcohol and carbonic acid. The carbonic acid formed everywhere throughout the mixture is entangled and retained by the tenacious gluten, and the dough is thus rendered light and cellular. When submitted in an oven to a baking temperature (302° – 500° F.), the outer surface becomes roasted, assuming a brown color, and undergoing a chemical change, the nature of which is

not perfectly understood. The starch is first converted by the heat into gum, this is then further roasted or submitted to a chemical process, of which all we know is, that it is the commencement of decomposition by means of heat, which is characterized in nearly all organic substances, even of the most different natures, by the appearance of a brown color, an agreeable bitter taste, and a much greater solubility in water. During the baking the alcohol developed by the process of fermentation is driven off, a part of the water evaporated, and the starch rendered more soluble; and when a high temperature is maintained during the whole operation, which is requisite to make good wholesome bread, another chemical change is effected by the hydration of the constituents of the flour. The Germans, before placing their loaves in the oven, pass a wet brush over their surface; this moderates the action of the heat, and gives the loaf a shining appearance. The quantity of water taken up by the flour, in mixing the dough, varies according to the quality of the flour; that made from wheat grown in southern latitudes takes up more than that grown at the north, that grown on high more than that on low lands, and that grown in dry more than that grown in wet seasons. The best flour takes up in dough about 45 per cent. of its weight of water, common flour about 35 per cent., while the ordinary quantity is about 40 per cent. Thorough kneading is necessary for the intimate incorporation of the ingredients; and it has beside a further use by acting mechanically on the texture of the dough, rendering it fibrous and delicate. Various attempts have been made to obviate the necessity of employing manual labor in kneading, which in large bakeries is not always the most cleanly of processes; and recently both in France and this country the difficulties which long baffled inventors have been overcome, and kneading machines which perform the work more perfectly than the hand have been constructed. The alcohol lost in the process of baking, though trifling in amount in a single family baking, becomes enormous in the aggregate of public consumption of bread; thus it has been calculated that the amount of bread annually consumed in London involves a loss of 800,000 gallons of spirit, and in the German customs union 7,500,000 gallons. Various attempts have been made to collect this product, and at one time £20,000 sterling was expended for the purpose at Chelsea, London, without any successful result. In the ordinary mode of bread-making, by means of leaven or yeast, a certain quantity of the starch is converted into alcohol and carbonic acid, and thus becomes lost as a nutritive element of the flour. Various methods have been proposed at once to prevent this loss and obviate the necessity of employing a ferment. Most of these methods are founded on the liberation of carbonic acid from one of its compounds by means of an acid. As salt is used in making bread, Henry of Manchester proposed as long ago as the latter part of the 18th century to

form this substance in the dough itself, by the addition of carbonate of soda and hydrochloric acid. In other cases tartaric or bitartrate of potash (cream of tartar), and bicarbonate of soda, are the materials employed; while others again recommend the substitution of the sesquicarbonate of ammonia for the bicarbonate of soda. The great objection to all these substances is that they cause a rapid but not continuous evolution of carbonic acid, so that there is danger of the bread sinking again before it is put into the oven. There is no real economy in these substitutes for yeast or leaven, since the cost of the materials is greater than that of the starch which is lost by the ordinary process. Certain mineral substances when added to damaged flour improve materially the appearance of the bread, rendering it whiter and firmer. In Belgium small quantities of sulphate of copper (blue vitriol) are commonly used; while in England, and to some extent in this country, alum (sulphate of alumina and potassa) is employed. This latter substance would appear also to enable the flour to take up or retain a larger amount of moisture. Though not perceptible to the taste, there can be little doubt that their continued use must exercise an injurious effect upon the animal economy. Warm bread when masticated forms a tenacious gummy mass, not readily dissolved by the saliva which aids in the digestion of the starch, nor easily penetrated by the gastric juice. Bread less than from 12 to 24 hours old should never, therefore, be eaten by those who have any regard for their digestive organs.

BREADALBANE, an extensive district of Scotland, comprising the western part of the county of Perth. It is traversed by the Grampian hills, and abounds in picturesque scenery. The banks of Loch Tay are remarkable for their beauty. There are mines of copper at Aithra, and of lead at Tyndrum. Taymouth castle, the residence of the marquis of Breadalbane, the chief proprietor, is in this district.

BREADFRUIT, the product of a tree (*Artocarpus incisa*, Linn.) found native in the Ladrone and South sea islands, where it grows to the height of 40 feet or more. Its leaves are deeply divided into sharp lobes, and are in size about 18 inches long and 11 broad. The fruit is a large green berry, resembling a cocoonut or melon in size and form, and is in the greatest perfection about a week before it ripens. An agreeable beverage may be obtained from it; it is baked in the West Indies like bread; and the bark furnishes the material for a species of cloth. The breadfruit is mostly valued for the receptacle of the seed, filled with a farinaceous fibrous pulp, though the nuts, when roasted, are as good as the best chestnuts. When ripe, the breadfruit becomes soft, tender, and white, resembling the crumb of a loaf; but it must be eaten while fresh, or it becomes hard and choky. The flavor is compared with that of a roasted potato. It is usually cut into several pieces, and roasted or baked in an oven in the ground. It

is often mixed with orange juice or cocoonut milk. The breadfruit furnishes the chief sustenance of the Society and other South sea islanders. The tree has been introduced into the West Indies, and been planted on the continent of America. This is the genus which has given its name to the natural order *artocarpaceæ*, which is so nearly related to the nettle tribe, *urticaceæ*, that some botanists class them in one order. The former are distinguished from the latter, however, by the position of their ovules, the manner in which their flowers are arranged, and by their yielding a milky juice; the juice of *urticaceæ* being watery. The species are all found in the warmer climates of the globe. Many of them have an acid and intensely poisonous milk, as the upas tree of Java, and certain Indian species of fig.

BREAKERS, the waves of the sea which are broken violently by rocks lying under the surface of the water or by the shore itself, and which dissolve their volume into white foam.

BREAKWATER, an obstruction of any kind raised to oppose the action of the waves, and make safe harbors and roadsteads. The outer mole of the harbor of Civita Vecchia was built by the emperor Trajan for this purpose; and the piers of ancient Piræus and of Rhodes are of the same class of structures. Herod, it is stated by Josephus, in order to form a port between Dora and Joppa, ordered mighty stones to be cast into the sea in 20 fathoms water, to prepare a foundation; the greater number of them 50 feet in length, 9 feet deep, and 10 feet wide, and some were even larger than these. In the use of such immense blocks of stone, the true principles of constructing a permanent barrier to the waves, appear to have been better understood than they were 17 centuries afterward. In modern times, the great breakwaters are those of Cherbourg in France, of Plymouth in England, and of Delaware bay in this country. From the experience acquired by their construction and history, principles before little understood have been established, upon which such works must be built to withstand the enormous forces opposed to their permanency. These were so little understood in the last century, that one of the commissioners appointed by direction of Louis XVI. to report upon the best locality for establishing, opposite the English coast, a port and naval arsenal, recommended the construction of a dike of 2,000 toises in length, in water 70 feet deep, in front of the harbor of Cherbourg, by sinking a vast number of ships filled with masonry as a nucleus, and covering these with heavy stones to within 18 feet of the surface. And when at last 4 of the ablest naval officers and engineers of France were appointed to execute the work, which was regarded as one of the most stupendous operations, certainly the greatest piece of hydraulic architecture, ever undertaken by man, the plan they adopted was one which proved impracticable after having been prosecuted from the year 1784 to 1789, at enormous expense.

This plan was the construction of huge truncated cones of timber, which, of the reduced size at which they were actually built, measured 86 feet in height, with a circumference of 472 feet at base, and 339 feet at top, the angle of the slope being 60°. This was strengthened by an interior concentric cone, 5 feet 10 inches within the outer one. The frame of each was made of 80 large upright timbers 24 feet long and 1 foot square. On these were erected 80 more of 14 feet in length, making, for the 2 exterior and 2 interior portions, 320 of these uprights. The machine was then planked, hooped, and firmly bolted together. The first cone was built and floated at Havre, then taken to pieces, transported to Cherbourg, and floated off and sunk on June 6, 1784; and the second on July 7 following, in the presence of 10,000 spectators; but before the cavity of this one could be filled with stones, its upper part was demolished in a storm of 5 days' continuance in August, and the stones it contained were spread over the bottom, interfering with the placing of the next cone. The original plan was to set 90 of these cones, of 150 feet diameter at base, 60 at top, and 65 feet height, in succession, and fill them with loose stones or masonry, and the spaces between them with a network of iron chains, to break the force of the waves. The number was afterward reduced to 64. After the 2d cone went to pieces, the government directed that the remainder should be set 192 feet apart. This distance, by a new order, was increased to 1,280 feet, the spaces to be filled in with loose stones. At last, when 18 cones had been sunk at enormous expense, and with serious damage to many of them, the plan was abandoned, the tops of those left standing were cut off down to low-water mark in 1789, and the system of construction by sinking rocks was recognized as the only process sure to succeed. The filling in of stone was continued till, at the end of the year 1790, the quantity sunk was estimated at 5,300,000 tons; and the total expenditure, by the estimate presented to the legislative assembly in 1792, was about 31,000,000 francs, or \$5,800,000. The commission appointed by the departments of war, marine, and the interior, in 1792, reported, after careful examination of the dike and of the partial protection it already afforded at different stages of the tide, that its stability could not be depended upon except by the use of larger blocks of stone as a facing than had before been employed—these stones should be at least of 15 to 20 feet cube; and they recommended that the dike be raised 81 feet above the level of the lowest tide, which would make it about 9 feet above that of the highest tides. But the revolution succeeding, further work was interrupted. In 1802, by advice of a new commission appointed 2 years previously by a new government, it was determined to raise the central portion of the breakwater to the height before recommended, for 195 metres (640 feet) in length, and to give it a

breadth at top of 19.5 metres, in order to construct upon it a battery of 20 pieces of the heaviest artillery; and the 2 extremities it was proposed to finally complete in the same manner. At that time the old work, which had originally been raised to low-water mark, was reduced by the action of the sea to 15 or 18 feet below it, and the profile imparted to it was regarded as that of greatest stability with least expenditure of material. The interior slope was one of equal height and base, 12.5 metres. The slope exposed to the sea had at bottom a height of 6.8 metres to a base of 9, succeeded by one of 6.2 to a base of 47.5; its original form was a uniform slope of 1 in height to 3 of base. The sea washing over the top tended to move the stones from the outside to the inside; and this action it was essential to oppose by raising the top above the surface of the water. In 1803, the central portion was completed to low-water mark, and a superstructure or parapet, of blocks of 60 to 80 cubic feet each, was raised along the south or inner side to the height of the highest tides, along which the smaller stones used in the construction, pressed upward by the great waves in the winter storms, collected and formed a solid and compact surface, at a new slope, of which the base was about quadruple the vertical height. It was observed that the lateral movement of the small stones by the storms, driving obliquely along the outer face of the dike, caused them to collect at each extremity in a conical mound of the precise configuration traced for the proposed terminal batteries; but to prevent their extending into and obstructing the passes, it was found indispensable to face the whole exterior with blocks large enough to resist these oblique impulsions. In May, 1805, the battery on the central portion was armed with 20 pieces of heavy ordnance. In February and May, 1807, occurred 2 great storms, the effects of which upon this portion, as also of the unprecedentedly severe storm of Feb. 12, 1808, are described in the "Memoir upon the Dike of Cherbourg, compared with the Jetty or Breakwater at Plymouth," by the baron Cachin, inspector-general of roads and bridges. In the last-named storm the battery was submerged, the parapet was upset, and the barracks and garrison, with 60 men, were swept away. The large blocks of stone, with which the dike was faced, were by this storm arranged in new positions, and so closely stowed, that they appeared as if placed by the hand of man in positions of the most perfect stability. As thus arranged, the outer side presents 4 slopes. At the upper part, reached only by the tops of the waves, the height is to the base as 100 to 185. Beneath this is the space between the high and low-water marks, which is exposed at all times of tide to the most violent action of the sea. Its slope is the most inclined, the height being to the base as 100 to 540. Below the lowest spring tides is a space but little ex-

posed to the action of the waves; the height of this slope to its base is as 100 to 802. The lowest part which is always submerged has a height of 100 to a base of 125. The slope on the inner side is of 45° . From the experience of these 2 breakwaters, incomparably the greatest of their sort which the mind of man has ever contemplated to undertake, M. Cachin concludes with the observation, that if man be strong enough to heap together rocks in the midst of the ocean, the action of the sea alone can dispose them in the manner most likely to insure their proper stability. This, it may be added, will necessarily vary in form with the specific gravity and size of the stones used. The length of the dike, as reported by M. Cachin, is 3,768 metres—2 $\frac{1}{2}$ miles; and the area of its transverse section 1,850 square metres. When complete, it is intended to extend from 3 to 4 miles, running nearly W. N. W. from the Isle Pilee toward Querqueville. In 1830 it was decided to raise the dike by building up a wall of rubble masonry faced with granite to the height of 6 feet above highest water. This is protected by a foreshore of great blocks of stone on the outer side, which extend in a slope of 120 feet to the depth of 21 feet below low-water mark. This nearly vertical wall (the slope of its sides being $\frac{1}{4}$ to 1) is 86 feet 8 inches wide at base, and 29 feet 8 inches wide at top. A parapet is raised to the height of 6 feet upon its outer edge, which is 8 feet 3 inches thick; at top 8 feet 6 inches wide. The altitude of the breakwater is given by the United States commission of engineers and naval officers, who examined it in 1829, at 72 $\frac{3}{4}$ feet, the base of its sea-slope being 228 $\frac{4}{5}$ feet; and they state that similar proportions were adopted at the Plymouth breakwater, the altitude of which is 57 feet and base 180 feet. The inner slope of this, however, was built at an angle of 82° , although that of Cherbourg had stood perfectly well at 45° . The adoption of the general plan of this work by the English and American engineers, sufficiently proves the correctness of its principles, though by some English authorities the work is alluded to as a failure.—The breakwater at Plymouth, England, was commenced in 1812, and it was considered as completed in 1841. Its object was to protect the inner harbor from the heavy sea that is driven in by southerly storms. Its dimensions are only about $\frac{1}{2}$ those of the breakwater at Cherbourg, its total length being 1,700 yards, made up of a central portion of 1,000 yards, and a wing bending in from each end, at an angle of 120° , of 350 yards. Its profile is 998 square feet. It was designed to have a base of 210 feet, breadth at top 80 feet, and height in the middle 40 feet. Its actual height exceeds this, but it is only about 8 feet above the highest tides. It is built of large blocks of limestone, some exceeding 5 tons in weight, brought in vessels from the quarries at Catwater, about 2 $\frac{1}{2}$ miles up the harbor. The convenience of position

of these quarries for loading the vessels, the facilities of quarrying the stone, and the judicious arrangements introduced, made the work of comparatively light expense. After some experience was had, the stone was quarried by contract at 2s. 5d. (58 cents) per ton, and transported for 84 cents; and the total cost of the stone laid, including land purchases, salaries, buildings, &c., was estimated in 1816 at about 8s. 1 $\frac{1}{2}$ d. per ton. In 1841, it was calculated that 3,869,261 tons of stone had been laid, at a cost of nearly a million and a half of pounds. In 1854 the expenditures had amounted to £1,528,639; the sum of £18,000 was appropriated for further expenses, and £21,000 more estimated as necessary to complete the work. The 15 vessels kept employed in transporting the stone were furnished with 3 railways laid along in the hold, upon which were run the loaded cars from the quarries, entering through 2 stern-ports. These could be tightly closed when the vessel was loaded. On each side were arranged 8 trucks of the extreme capacity of 5 tons each. In discharging, these were drawn out by a windlass on deck, and upset as they passed out of the ports, each car being drawn up on the deck and run forward to make room for those behind. At the quarries they left the deck, and the track on which they descended over the stern being raised up, the loaded cars were run under it, into the hold. The usual cargo of 45 to 65 tons could thus be discharged in less than an hour. On Jan. 19, 1817, the work was tried by one of the most severe storms ever known. The breakwater, though in an unfinished condition, caused perfect protection to the inner harbor, where without it the damage would have been immense. Previous gales had had no effect upon it; but this caused the upper stratum of the finished part, 200 yards in length and 20 in breadth, to be stripped, and the huge stones of 2 to 5 tons weight to be carried over from the outside, and deposited upon the northern side of the breakwater. The quantity thus removed was estimated at 8,000 tons. Since that time the outer slope has been "cased with regular courses of masonry, dowed, joggled, dovetailed, and cramped together; the diving-bell being brought into requisition for placing the lower courses, which were of granite, and were laid horizontally on their natural beds, and dovetailed, lewised, and bolted together." This work was reported by Mr. Stuart, the superintendent of the breakwater, to have been done on a slope of 5 to 1, as the sea had left it. The foot of the outer slope has also been extended further out with loose stones, to give protection to the courses of masonry.—In the plan of construction of the breakwater for a harbor of refuge at Dover in England in 1846, a proposition was favorably entertained by the commission, of building a vertical wall for a breakwater, braced at its base by sloping piles of stone; and this was recommended by many eminent men as an eco-

nomical method, and one that might be depended upon for stability. By their reports it would seem they attached but little importance to the horizontal shock which a wave, driven by the winds and swaying backward and forward, gives by its inertia, when it impinges upon a vertical wall. Sir Howard Douglas, one of the commission, strongly dissented from their views in the able report he presented to the house of commons. He also strongly opposed the use of bricks cemented into blocks, as was recommended by some, or of any material but stone, in the forms already proved so advantageous at Cherbourg and Plymouth.—The construction of an important breakwater was commenced at Portland on the southern coast of England, in 1849. It is to consist of an outer and inner mole, the total length of which is to be 2,500 yards. The area these will protect is about 2,107 acres of Portland bay, over which the depth of water is from 2 to 10 fathoms. The entrance is made available for the largest men-of-war and steamers. About 8,000,000 tons of stone had been deposited up to the early part of the year 1858, and the arrangements are so complete for running down the stone upon the several lines of railway laid from the quarries, that nearly 500,000 tons can be deposited annually. These quarries are of the oolitic limestone or Portland stone, the same which furnished the stone for St. Paul's cathedral, London, and for the bridges of Westminster and Blackfriars. They are upon summits of considerable elevation—one full 300 feet above the water, from which the wagons descend by gravity to the breakwater, the loaded cars drawing up the empty. Stone is quarried by convicts, of whom 928 are kept thus employed; and 396 other laborers are engaged in other work connected with the construction. The stone used is rubble, faced with large blocks, some of which are quarried and laid, weighing 5 to 6 tons. Although the work considerably exceeds in extent the breakwater at Plymouth, its estimated cost, from the economical arrangements and convenient supplies of stone, is less than one million pounds sterling.—In 1828, a commission appointed by the government of the United States, under act of congress of May 24, 1824, consisting of Commodore Rodgers of the navy, Brigadier-general Bernard of the engineer corps, and William Strickland, architect and engineer, recommended the construction of a breakwater in Delaware bay, just within Cape Henlopen. The work was required from the fact that, from New York harbor to the mouth of Chesapeake bay, there was no good place of shelter along the coast for vessels exposed to easterly gales. The entrance of Delaware bay on the south side was judged the most advantageous point for constructing a harbor of refuge, though it was exposed both to the most dangerous gales from the Atlantic between E. S. E. and N. E. by N., and those across the waters of Delaware bay from N. E. by N. around to the W.

The place is also exposed to the fields of ice that are brought down by the ebb tide in the winter, and urged on by the heavy northerly gales of this season. The plan of the breakwater was consequently designed to guard against dangers from these different directions. It consisted, first, of a straight mole, 1,208 yards long, in water of 5 to 6 fathoms depth, the sea slope having a base of 105½ feet to a height of 39 feet, and profiled after the curvilinear figure assumed by the breakwater at Cherbourg; the inner slope to be at an angle of 45°. The width at top was designed to be 22 feet (afterward increased to 80), and the entire width at base 166½ feet (afterward increased to 175 feet). Its position was in a line tangent to the seaward extremity of Cape Henlopen, extending E. S. E. and W. N. W., which is in the original course of the ebb tide; the shore of the cape is 1,000 yards distant from its eastern end on the course of the breakwater, but only 500 yards opposite toward the south. This mole protects the harbor behind it from the northern and eastern winds. The second mole, designated as the ice-breaker, is opposite the western end of the breakwater proper, and separated from it by a channel of 850 yards. It lies in an E. by N. and W. by S. direction, making an angle of 146½° with the course of the other. The area protected against all the most dangerous winds, with a depth of 8 to 6 fathoms, is estimated at 860 acres. The work was commenced in 1829, under direction of Mr. Strickland, and in 1834 it was so far advanced, that vessels found protection behind it. Blocks of rubble from the nearest quarries were thrown in to form their own slopes for a foundation. The outer covering to within 6 feet of low-water mark was of blocks from 2 to 8 tons weight; from this to low-water mark they were of 8 tons; thence to high-water mark, 3 to 4 tons, and above this, 4 to 5 tons, to a height of 4 feet 8 inches above highest water. The ordinary rise of tide is nearly 5 feet, equinoctial tides 7 feet, and extreme tides 10 feet. As the breakwater was built, its exterior slope for the first 16 feet from bottom was at an angle of 45°, thence to summit 28°, or 8 to 1. The inner slope was 45°. The surfaces of both slopes to the level of low water were paved with rough blocks set at right angles to the slope, and well wedged together, thus presenting as little surface as practicable to the action of the waves. The stone used in this work was obtained from a variety of sources, some trap rock from the Palisades on the Hudson river, greenstone from the northern part of Delaware, and gneiss from different quarries in Delaware. These rocks, though averaging a weight of 175 pounds to the cubic foot, and employed of the dimensions named, were insufficient to withstand the action of the sea in the course of the construction of the moles. During the winter season, those upon the surface of the work were more or less displaced, and a large piece of 7 tons weight was moved

in one storm 18 feet to the inner slope of the ice-breaker, down which it was lost. At the same time about 200 tons of other heavy stone, that had been thoroughly wedged and compacted together, was torn up and swept over to the inner side.—The experience acquired by all these breakwaters, and by the action of the waves upon coasts exposed to their greatest violence, establishes the principle that blocks of stone of large dimensions only can be depended upon to retain their places; that though smaller ones may be dovetailed together, and present an apparently solid foundation, the heavy waves exert a hydrostatic pressure upward proportional to their height, while the horizontal movement of the wave is exerted to thrust the mass forward. Mr. James Walker, president of the British institution of civil engineers, advanced the opinion in 1841 that a partial vacuum is created by the action of the waves, and the atmospheric pressure being taken off for an instant, the mass of stone is the more readily influenced by the forces which at the same time solicit it. ("Civil Engineer and Architect's Journal," Sept. 1841.) If the whole atmospheric pressure were taken off the surface, it would be equivalent to the removal of a weight represented by a column of rock 11½ feet deep, weighing 175 pounds to the cubic foot. Under such circumstances, and exposed to the action of a wave 20 feet high, which is capable of moving masses of rock 7½ feet deep, stability would be insured only by the addition of this amount to the 11½ feet. But as it is not probable that a large proportion of the atmospheric pressure is ever thus removed, and as 22 feet is regarded as the maximum height of waves, a depth of solid stone of 15 feet, used as a coping, would probably resist all action of the waves. The subject is ably treated in a paper "On the Force of the Wind and Sea," by Ellwood Morris, civil engineer, who was employed as an assistant in the construction of the Delaware breakwater, published in the "Journal of the Franklin Institute," 8d series, vol. iii., 1842. Mr. Morris proposes a new form of construction of breakwaters, of which a transverse section is figured in the article referred to. It consists essentially of a semi-cylindrical mass of stone at least 32 feet in diameter, formed within of rubble stone well set in cement mortar, and without of large blocks shaped and arranged as arched stones, and cemented and bonded together; the base of the arch to be upon a cemented floor sloping toward the sea with an inclination of about 6 feet base to 1 foot rise. The seaward side of the arch is to be protected by a foreshore of rough cubical blocks weighing above 10 tons each; this work to reach above the highest tides, and slope down at an angle of 2½ or 3 to 1, and below low water 2 to 1. Thus built, the whole cylindrical mass would gravitate as one body; and the weight of the upper portion would be most advantageously distributed to bind together and hold down all parts of the

work. The construction and history of the principal breakwaters are fully treated in the great work of Sir John Rennie, president of the institution of civil engineers, upon British and foreign harbors, published in 1854, in 2 folio volumes.—Breakwaters of considerable magnitude have been constructed upon the great northern lakes for the protection of harbors, as at Buffalo and Cleveland on Lake Erie, and Chicago on Lake Michigan. The first-named is a massive pier of stone-work. Piles driven in rows into the sand are sometimes employed for the construction of breakwaters; but they are of little service in exposed situations. Beaches are protected from the inroads of the sea by this method, by layers of brush kept down by stones, intended to hold the sand together and collect more, and also by triangular frames of timber, arranged closely together and kept in place by stones placed upon the projecting ends of the timbers which serve as the base of the frames.

BREAM (*pomotis vulgaris*, Cuv.), an acanthopterygian fish, of the family *percidae*, of which several species are found in North America, and of which the above, called also sunfish, pondperch, and roach, is the most common. In this genus the borders of the preoperculum have a few denticulations; no teeth on the palatine bones and tongue, but with minute teeth on the jaws, vomer, and pharyngeals; branchial rays 6; a membranous elongation at the angle of the operculum. This beautifully colored species is common in fresh ponds, and is an excellent edible fish; the length rarely exceeds 8 inches. The color above is greenish brown, with rusty blotches irregularly distributed, in some specimens arranged longitudinally; undulating deep blue lines, longitudinally across the gill covers; opercular membrane black, with a bright scarlet blotch at its posterior portion; abdomen whitish or yellowish; dorsal, anal, and caudal fins dark brown; ventrals and pectorals yellowish. The body is compressed; the back curves very gradually as far as the posterior extremity of the dorsal fin, and then abruptly gives place to the fleshy portion of the tail; the eyes are large and circular; nostrils double, the anterior tubular; mouth small and minute, teeth sharp; the lateral line assumes the curve of the back; the scales of the body are large, and dented at the base, small at the base of the fins; the pectorals are long, and the caudal emarginate. The bream builds a circular nest along the shore, by removing the weeds and excavating the sand to a depth of ¼ a foot and an extent of 2 feet; sometimes 20 or 30 occur within the space of a few rods, and often in very shallow water; over the nest the fish hovers, protecting its eggs and young for weeks; it darts against other fishes which come near, and is so intent on its guard duty, that a spectator can approach very near, and even handle it. This species has a wide distribution, being found in New Brunswick, the Canadian lakes, the New England states, Ohio, Kentucky, &c. The name of bream is given in

Great Britain to several marine species of the family *sparidae*, as to the *cantharus griseus*, Cuv., and to 2 species of *pagellus*; also to some malacopterygians of the carp family, as *cyprinus drama*, Linn.

BREASTPLATE, the principal piece of defensive armor for the body, called in Greek *σπαράς*, which is also the word for the chest; in Latin *lorica*, supposed to be derived from *lorum*, a strap, as if it had been originally made of leather; and in French *cuirasse*, of certainly the same etymology which is more questionably assigned to the word *lorica*. In the oldest authorities, both scriptural and classical, we find that defensive armor of all sorts was made of brass or bronze, except the buckler or shield only, the basis of which was various, sometimes of bull-hides macerated and doubled many times, sometimes of osier, and lastly, sometimes of thin plank covered with leather. The breastplate was invariably of metal, unless in some instances among the oriental nations, who substituted quilted jackets of cotton for corslets of metal, as did the Mexicans and Peruvians at the time of the discovery and conquest of this continent by the Spaniards. The Greek corslet, which was open on the chest, and shaped much like the modern corsets of female wear, with straps of metal crossing the shoulders and fastened in front by aid of bosses, often representing lions' or sphinxes' heads, was usually modelled to represent the naked body, with the paps, the ribs, the abdomen, and even the navel, clearly figured by depressions or elevations in the material. The latter was usually a bronze of many metals, among which the most precious minerals, as gold and silver, were frequently mingled with copper, tin, and electrum, whatever may be the substance intended by that name, which is frequently found in Homer. Among the oriental nations scale armor was in use; and it is said by many authors that the Roman legionaries wore chain mail. This does not, however, appear to be the case, from the ancient statues, which represent the consuls and emperors wearing corslets of the Greek fashion, closely imitating the natural form of the naked body; or from the figures of Roman soldiers, on Trajan's and Antonine's columns, who usually are armed with breast and back pieces, formed of broad, overlapping, horizontal plates, like the bands of an armadillo. The breastplates of the complete suits of the middle ages were formed of two pieces, for the breast and back, covering the whole trunk from the collar-bone, where they were overlaid by the plates of the gorget, to the hips, where they were finished by a wide projecting rim or flange, sloping outward and downward so as to overhang and cover the jointed plates called *tuillettes*, or *talets*, which defended the thighs. The two pieces were connected above the shoulders, and on the sides, by clasps and rivets, and covered the whole body, leaving the arms entirely unprotected, exactly resembling, in that respect, a modern coat without the sleeves, until the shoulders were covered

by the poldrons, which were put on over, and, of course, after the breastplate. This piece of armor, in the middle ages, was invariably made of steel, and was peaked in front, in the form of what is called a pigeon breast, in order to cause all lance points, missiles, or thrusts of the sword to be glanced aside innocuous. The modern cuirasses of the heavy cavalry of the last and present century, are framed exactly on the plan of the knights' corslets of the middle ages; except that, as no gorget or armor for the limbs is now worn, they are finished at the neck and shoulders by projecting rims, like those which guard the hips. In the English and Austrian services, the breastplates of the cuirassiers are invariably of bright steel; in the French and Russian, some of the regiments, as the gendarmes and carabiniers of the former, wear them of polished brass.—The breastplate of the Jewish high priest, worn as an ornament, not as a defence, was composed of rich stuff, adorned with 12 precious stones, engraved with the names of the 12 tribes of Israel. It had a typical, mystic meaning.

BREAST-WORK, an elevation raised for the purpose of protecting troops against the shot of an enemy. It is usually a mass of earth, but may also be made of gabions, fascines, or bags of sand, wool, or cotton. Its thickness must be made to vary, according to the artillery of the enemy, but should seldom be less than 10 feet, and its height should be such that the interior of the intrenchments cannot be commanded from any external point.

BREATH. See **RESPIRATION**.

BREATHITT, a county in the eastern part of Kentucky. It has an area of 600 sq. m. and the surface is diversified by high hills and fertile valleys, and mostly covered with forests. The north and middle forks of Kentucky river intersect it. Iron ore and stone coal are found in some abundance, and a bed of sandstone underlies the whole county. Timber, coal, beeswax, and ginseng are the chief articles of export. The productions in 1850 were 155,840 bushels of Indian corn, 2,088 of oats, 8,916 pounds of wool, and 1,586 of flax. There were 3 sawmills, 9 grist mills, 5 churches, and 80 pupils attending public schools. Value of real estate in 1855, \$873,817. Pop. in 1850, 3,785, of whom 170 are slaves. The county was formed in 1839, and named in honor of John Breathitt, late governor of the state. Capital, Jackson.

BRÉBEUF, JEAN DE, one of the earliest French missionaries to Canada, born in 1593, died in 1649. He set sail in 1625 with Champlain, arrived at Quebec when but a single house was seen there, and fixed his residence among the Hurons. He learned their language, and gained their confidence. In 1649 they were suddenly attacked by the Iroquois, and Brébeuf fell into the hands of the latter, by whom he was put to death with frightful tortures. His "Catechism translated into the language of the Hurons" was published at Paris in 1652.

BRECCIA, a term from the Italian, applied to rocks composed of angular fragments, which appear to have once existed in other formations. These broken up, and their pieces again united, constitute the rocks called breccias. If the fragments, before being reunited, are rolled into the forms of pebbles, the new rock is then called conglomerate or puddingstone. These and breccias are of frequent occurrence among the stratified rocks. The Potomac marble, of which fine specimens are seen in the columns of the house of representatives at Washington, is a breccia of marble, sandstone, and other minerals found in the new red sandstone formation, where it crosses the Potomac. Its various components having different degrees of hardness, make it a difficult rock to polish, and prevent its coming into general use, as its beauty would render desirable. Quarries of a fine brecciated nature have been recently opened on the shores of Lake Champlain, near Burlington, which promise to furnish large supplies of a beautiful ornamental stone, susceptible of a high polish, and presenting a variety of fine colors, in which salmon and different shades of yellow and brown are most prominent. When breccias are produced from rocks originally stratified in their layers, it is curious to observe how the lines of these layers are preserved in the broken fragments, and may be traced in the various directions in which they are thrown together. Breccias are also an artificial preparation, as in the article concrete.

BRECHE-DE-ROLAND, a defile of the Pyrénées between France and Spain, about 11 miles south of Luz. It forms a difficult passage 200 or 300 feet wide, and is at an elevation of 9,500 feet above the sea. On either side rises a rocky wall from 300 to 600 feet high, and surrounding it are the rocks called Tours de Marboré. The name of this defile signifies the "breach of Roland," and a popular tradition is current among the peasants of the neighboring country that Roland opened it by a blow of his sword.

BRECKENRIDGE, a county in the N. W. part of Kentucky, bordering on Indiana. The Ohio forms its N. W. boundary, and its southern limit is marked by Rough creek. The surface consists of undulating uplands. The soil has a basis of red clay and limestone, is fertile and well watered. The most remarkable stream in this county is Sinking creek. A few miles below its source it suddenly plunges below the surface, and is lost for 5 or 6 miles, when it emerges from the ground, and flows into the Ohio. Penitentiary cave, near this creek, is said to contain chambers of vast size, but it has never been thoroughly explored. The productions in 1850 amounted to 521,766 bushels of Indian corn, 12,867 of wheat, 188,070 of oats, 2,288,844 pounds of tobacco, 24,280 of wool, and 20,818 of flax. There were 10 sawmills, 17 corn and flour mills, 8 tanneries, 21 churches, and 600 pupils attending public schools. Value of real estate in 1855, \$1,336,825. The county

was formed in 1799, and named in honor of John Breckinridge, a statesman of Kentucky. Area, 450 sq. m.; pop. in 1850, 10,593, of whom 1,966 were slaves.

BRECKENRIDGE, JAMES, a prominent citizen of Virginia, born March 7, 1763, in the county of Botetourt, died there May 13, 1833. He was a soldier of the revolution, a successful member of the bar, a prominent leader of the old federal party in the general assembly of the state, and for many years a representative of the Botetourt district in the United States congress, an active and efficient friend of that great improvement by which Virginia proposes to connect the waters of the Chesapeake with those of the Ohio, and a zealous co-laborer with Mr. Jefferson in the enterprise of founding and establishing the university of Virginia. Shortly after his death, Mr. Benjamin Watkins Leigh described his character in these terms: "Knowledge of men; acquaintance with business; habits of cool and deep reflection; profound judgment of the effect of measures proposed for his consideration; an unerring moral sense of what was just; an inflexible resolution to maintain it; the utmost fairness and candor in judging of men and measures; courage and fortitude, moral as well as personal, which nothing could subdue or shake; a striking dignity of manners and deportment, founded upon conscious rectitude and honor, and sustained without effort or pretension; these were the good and noble qualities which he carried to the service of his country in her public councils, and which gave him, in whatever affairs he bore a part, an influence universally felt and acknowledged."

BRECKINRIDGE, JOHN, U. S. attorney-general under Jefferson, died at Lexington, Ky., Dec. 14, 1806. He was elected U. S. senator from Kentucky in 1801, and introduced in 1802 a resolution for the repeal of an act of 1801, by which the judiciary system of the United States had been essentially changed, several new tribunals being established. This resolution gave rise to a protracted and able debate, in which Mr. Breckinridge distinguished himself by his eloquent speeches. He also took an active part in the discussion relative to the free navigation of the Mississippi.

BRECKINRIDGE JOHN, D. D., a Presbyterian clergyman, son of the preceding, born at Cabell's Dale, Ky., July 4, 1797, died at the same place, Aug. 4, 1841. He graduated at Princeton college in 1818. While at Princeton, he joined the Presbyterian church, and though his father had designed him for the law, he was led to make choice of the profession of the ministry. While prosecuting his theological studies at Princeton, he acted as tutor in the college. In the year 1823 he was licensed by the presbytery of New Brunswick to preach, and shortly after served as chaplain to congress. Having been subsequently transferred from the New Brunswick to the Lexington presbytery, he was by the latter body ordained to the

ministry, and installed pastor of a church in Lexington, Ky. After remaining in this charge 4 years, during which time he established a religious newspaper entitled the "Western Luminary," he was called to the second Presbyterian church in Baltimore, as colleague with the Rev. Dr. Glendy. Being appointed in 1831 secretary and general agent of the board of education of the Presbyterian church, he removed to Philadelphia, and entered upon the duties of his office. He occupied this post for a period of 6 years, at the expiration of which he was elected by the Presbyterian general assembly professor in the Princeton theological seminary. He filled the chair with singular ability. While attending to his duties as professor, he was frequently called to preach in the New York pulpits. During his connection with the seminary he engaged in a public controversy with Bishop Hughes, of New York, the subject of which embraced the distinctive doctrines of the Roman Catholic church. This controversy was subsequently published in a volume entitled "Roman Catholic Controversy." He delivered an address before the literary societies in the New York university, which also was published with several other papers, all of which show his ability as a polemical writer. He took an active part in the controversies which agitated the Presbyterian church, and whether in presbyteries, synods, or general assemblies, he always stood firmly on the old school platform. As a debater in the ecclesiastical courts, or on the platform, he was generally direct and to the point. All his sermons, speeches, and arguments were extempore, yet correct and logical. In 1833, upon the organization of the board of foreign missions, he was elected its secretary and general agent, and he devoted his entire time and energy to the superintendence of its operations. His abundant labors were, however, too great for his physical constitution, and premature exhaustion was the result. He had but just reached the meridian of life when his health gave way, and he was obliged to retire from his position at the head of the missionary enterprise in the Presbyterian church. He died on the spot where he was born. At the period of his decease he was pastor elect of a Presbyterian church of New Orleans, and president elect of Oglethorpe university, Georgia.

BRECKINRIDGE, JOHN C., vice-president of the United States in 1857, born near Lexington, Kentucky, Jan. 21, 1821, is a grandson of John Breckinridge, U. S. senator and attorney-general. He was educated at Centre college, at Danville, and studied law at the Transylvania institute in that state. After a short residence in Iowa, he returned to Kentucky, married Miss Birch, of Georgetown, and settled at Lexington, where he has been since one of the leading members of his profession. At the breaking out of the war with Mexico he entered the military service, and was elected major of the third regiment of Kentucky volunteers. The regiment was mustered late, so that he had

little opportunity for active service. When on duty in Mexico, however, he was employed as counsel for Gen. Pillow, in the series of singular prosecutions between him and his associates and superiors. On his return he was elected to the house of representatives of Kentucky, where he first had an opportunity to exhibit his powers as a debater. In 1851 he was elected to the federal house of representatives, after an animated contest, over Gen. Leslie Combs. In 1853 he carried the election to the same office, after a still more violent and protracted contest, during which he exhibited remarkable vigor and perseverance, over Governor Robert Letcher. One of his first public performances was the delivery of a eulogy on Henry Clay, soon after his decease, although he was of a different party from that distinguished statesman. During the first session of the 33d Congress, in the course of the discussion of the Kansas-Nebraska bill, he was involved in a personal altercation with Mr. Cutting, a member from New York, which led to the preliminaries of a duel. The meeting was, however, avoided without any imputation upon the character or conduct of Mr. Breckinridge. Upon the accession of President Pierce, he was offered the ministry to Spain, previously to the appointment of Mr. Soule, but declined it. In 1856 he was nominated and elected vice-president, in conjunction with Buchanan as president, and entered upon the office March 4, 1857. Although the youngest officer who has ever held that position, he has presided over the senate of the United States with dignity and impartiality.

BRECKINRIDGE, ROBERT J., D. D., LL. D., uncle of the preceding, an American divine of the Presbyterian church, born at Cabell's Dale, Ky., March 8, 1800. He studied successively in Princeton, Yale, and Union colleges, graduating at the last in 1819. He then fitted himself for the bar, and practised law in Kentucky for 8 years from 1823, being in that period several times a member of the state legislature. His family had been Presbyterians since the time of the reformation, and upon profession of his faith in 1829 he joined that church. He was ordained pastor of the first Presbyterian church in Baltimore in 1832, in which position he remained 13 years, and rose to eminence for his eloquence and power in the pulpit. In 1845 he was elected president of Jefferson college, Pa., where he remained 9 years, at the same time being pastor of the church in a neighboring village; after which he removed to Kentucky, assumed the pastorate of the first Presbyterian church in Lexington, and became superintendent of public instruction for the state. In 1853 he resigned these charges, having been elected by the general assembly professor of exegetic, didactic, and polemic theology in the newly established seminary at Danville, Ky., an office which he continues to hold. He has participated largely in the religious, moral, and philanthropic movements and controversies of the last 35 years.

While in Baltimore he edited the "Literary and Religious Magazine" and the "Spirit of the 19th Century," and his discussions with the Roman Catholics, which extended over the whole field of faith and practice, gave evidence of the extent of his knowledge of church history and systematic theology. In the general assembly of the Presbyterian church, in which he has often had a seat, he has exerted a commanding influence. During the controversies which led to the disruption of the church into the old and new schools, he steadfastly maintained the old landmarks in opposition to every innovation, but was efficient in removing from the discussion all personal aspects, and in basing it upon fundamental principles. It was chiefly through his agency that the managers of the American Bible society, after voting to adopt the revised edition of the Bible as their standard, subsequently recoiled from that action. He is the principal author of the common school system of Kentucky, and the prosperity of the theological school at Danville is almost wholly due to him. In the anti-slavery discussion by which the country has been agitated he has taken a decided course in opposition to extreme opinions on either side, and for his kind services to the free blacks of Maryland on one occasion he received a piece of gold plate as a present from more than 1,000 of them. He published 2 volumes of "Travels in Europe" in 1838, and, beside a great number of tracts, essays, and letters, has recently (1857) published an important work on theology objectively considered.

BRECKNOCK, or **BRECOX**, an inland county in the S. of Wales, traversed by the Black mountains and other ranges, containing the Van or Beacon mountain, 2,862 feet high, and noted for its magnificent scenery. Area, 754 sq. m.; pop. in 1851, 61,474. The river Wye bounds it on the N. E. and N., the Usk flows through it, and near its centre is Brecknock-Mere, or Llans-afeddar, one of the largest lakes in S. Wales. The soil on the mountains is poor, but the valleys yield grain, potatoes, and turnips in abundance, and these, together with timber, wool, cattle, and dairy produce, constitute the chief resources of the county. About half of the land is under cultivation. The mineral productions, embracing coal and iron, are inconsiderable. There are iron works in the E. part; but they draw both ore and fuel principally from other counties. The manufactures are coarse woollens and worsted stuffs.

BRECKNOCK, **BRECOX**, or **ANER-HONDEY**, a parliamentary and municipal borough, pop. 6,070, and market town of Wales, capital of the county of its own name, and seat of the quarter sessions, county assizes, and petty sessions. It is situated in a healthy and beautiful valley, at the confluence of the rivers Honddu or Hondey, Tarrell, and Usk, the first of which is crossed by 8 bridges, and the last by one. It has 8 long avenues, intersected by a number of shorter ones, all well kept and paved, and most of them straight. The public walks are remarkably

beautiful. In one important respect, however—a supply of good water—the town is deficient; and though gas has been introduced, the arrangements for lighting the streets are also susceptible of considerable improvement. The Brecknock and Abergavenny canal connects it with the Monmouth canal, and a railway with Merthyr Tydvil, 14 miles S. There is little trade, except with the immediate vicinity, and the manufactures, consisting of woollens, flannels, and hats, are insignificant. Many of the shops and dwellings are built with much elegance, and the public edifices are generally handsome and substantial. The principal are a new town hall in the Grecian style, a collegiate and other schools, alms houses, a barrack, several churches and chapels, a mechanics' institute, and a large market-house. The town was once surrounded by walls, which were demolished by the inhabitants during the last civil war.—Brecknock was founded about 1092. It grew up around a castle built in that year by Bernard Newmarch, a relative of William the Conqueror, who assumed the title and power of lord of Brecon, and designed this stronghold to secure his new possessions. Under Humphrey de Bohun, earl of Hereford and high constable of England, it was considerably strengthened and enlarged. Its ruins, but little of which still exists, are included in the grounds of the castle hotel. Two convents, one a Benedictine, the other a Dominican, were built here in the reign of Henry I. by the founder of the castle. The former is now the parish church of St. John, usually called the priory church. It is in the form of a cross, with a tower rising from the centre. The style of architecture is partly Norman, partly English. In the neighborhood are Roman antiquities and remains of encampments. Brecknock was the birthplace of Mrs. Siddons, the actress.

BREDÁ, a strong town and fortress, formerly of the first order, of the Netherlands, province of North Brabant, capital of the district of the same name. Pop. of the district, 90,000; of the town, 14,000. A canal connects the town with the Meuse. Woollen goods, carpets, and tapestry are manufactured here; there are also tanneries and breweries. The town is noted for its military and naval academy, the latter with about 800 cadets. The principal Protestant church contains many interesting monuments and works of art. Being one of the frontier fortresses, it was of great importance to Holland. During the wars of the reformation, of the Spanish occupation of the Netherlands, and the later wars between the Dutch, Spaniards, and French, it was a constant object of contention. It was taken by surprise, in 1581, and was recaptured by a skilful stratagem, in 1590, by Prince Maurice of Orange, who contrived to smuggle a party of Dutch soldiers into the town, concealed in a turf-boat, which was carried up the river Merk through the outer defences. In 1625 it endured a siege of 10 months, by Spinola, and again, one of

4, by Henry of Orange, its resistance in neither instance being successful. During the French war of the revolution it was taken by Dumouriez in 1793, but liberated in consequence of his losing the battle of Neerwinden; in 1794 it was besieged by Pichegru, and held out until the whole of Holland surrendered; and lastly, in 1813, when, on the approach of the Russian vanguard, the French garrison sallied against Benkendorf, the townspeople rose and shut the gates on the defenders, and finally surrendered it to the allies for Holland. It is most noted for 2 events, the former being the famous declaration of Breda, issued by Charles Stuart previously to his restoration, May 1, 1660, in the shape of letters to the parliament, promising a general amnesty, liberty of conscience, a settlement of forfeited estates by consent of the 2 houses, and liquidation of the arrears due to the army. The latter was the peace of Breda, concluded between Holland, Great Britain, France, and Denmark, July 31, 1667.

BREDERODE, HENDRIK VAN, the most distinguished member of a family noted in the annals of the Netherlands since the 11th century, born in Brussels in 1581, died at Gemmen, duchy of Cleves, in 1568. He was originally in the Spanish service, but joined the party of Egmont and Horn. In 1565 he placed himself at the head of the Flemish nobles, and the following year presented a petition to the regent Margaret, praying for the removal of the inquisition. He was one of the founders of the patriotic association of the Beggars (*les Gueux*), who contributed so much to the expulsion of the Spaniards. On the breaking out of the war he levied a strong force, at the head of which he was for some time successful, but the overwhelming strength of the Spanish monarch compelled the insurgents to retire, and Brederode took refuge in Germany, where he died.

BREDOW, GABRIEL GOTTFRIED, a German historian, born in Berlin, Dec. 14, 1773, died in Breslau, Sept. 5, 1814. He was a graduate of Halle, forsook theology to devote himself to the study of the geography and astronomy of the ancients, on which he published several works, officiated as professor in different institutions, and finally in the university of Breslau. His historical works met with remarkable success, particularly his "Memorable Events of Universal History" and his "Elaborate Narrative" of the same, the former having passed, from 1804 to 1852, through not less than 26 editions, and the latter through 18.

BREDE, a river of Cape Colony, S. Africa. It rises in a mountain basin called the Warm-Bokkeveld, and breaking through the mountains at Mostert and Hock pass, takes a S. E. course to the sea, at Port Beaufort. It is one of the deepest and largest rivers of the country, but navigation is much impeded by a bar at its mouth.

BREEDING, the method of improving the various species of domestic animals by selection

of parents, such as are ascertained by experiment to be most likely to produce excellence in the progeny. Other points of consideration are also involved in the question of breeding, as, for instance, the relative age of the sires and dams; the state of physical health, which is ordinarily termed condition, to be maintained in both parent animals at the period of generation, and, in the female, during the whole time of gestation and of the nutrition of the young; the food, lodging, clothing, temperature to be preserved, and degree of exercise, which are most conducive to the production and maintenance of such condition in the parents and in the young animals. Much experiment within the last few years has had the result of establishing what may be called principles of breeding, founded, in the first instance, on theoretic views, and subsequently confirmed by the effect of many trials. Until a comparatively recent date breeding in a scientific method had been applied only to race horses, and to dogs of some few choice and well-known breeds, among which pedigrees had been preserved as regularly, though not to so remote a date, as those of race horses. Latterly, the same plans have been adopted with other breeds of horses, with animals of the ox family, with sheep and swine, as also with some species of poultry and pigeons. The last, however, are rather articles of fancy and ornament and luxury than of real, economical, or political utility; but in the case of horses, cattle, sheep, and swine, this is by no means the case, since they constitute a large item in the estimate of the wealth of nations; and when it can be shown, as it recently has been of the adjacent countries of France and England, that a much inferior number of acres in one country feeds a vastly superior number of sheep, and that the same number of sheep in the one supply a vastly superior quantity of animal food to those in the other, it follows that the advantages of agriculture, and of the science of breeding, as a most important part of agriculture, cannot but be admitted, and can scarcely be too highly estimated. In cattle and sheep breeding, the same method precisely has been pursued as in the improving of the particular cold-blooded families of the horse, and that with results perfectly astonishing. It is simply the selecting, in the first instance, of the most perfect animals, male and female, wherefrom to breed, and to allow none other but the most perfect to be bred from, looking to all the points desirable in the animals on which the improvement is to be made—health, size, beauty of form, and goodness of constitution in all animals; in milch cattle, the milk-producing to the loss of the fat and muscle-giving quality; in beef cattle, the tendency to make fat and muscle, with the smallest proportion of bone and offal; in general cattle, the union of the 2 qualities of yielding milk and producing muscle and fat combined, to the greatest extent to which they are found to be combinable. In sheep-raising, 2 qualities are principally aimed

at, the meat-producing and wool-yielding tendencies; and these 2 qualities, with one exception, are not generally united in one breed—that breed is the Southdowns. In cattle, the finest milkers are, probably, the Alderneys, Devons, and Ayrshires; the best beef cattle, the Herefords, long-horns, and the small Scottish Kyloes; the best breed, incomparably, for the union of milk and meat yielding, are the Durhams, and some of the mongrel, or, as it is now the fashion to call them, grade breeds; those particularly may be specified between the Durhams and Devons, the Durhams and Ayrshires, the Ayrshires and Devons, and that between both the Durhams and Ayrshires and the common American natives, which partake more of the Devon than of any other breed. The American native also interbreeds well with the Devon, its original ancestor. In sheep-raising the greatest advantage has been obtained from the improvement of particular races by careful selection of stocks, not by intermixture of breeds. The degree of improvement effected, both in the yield and texture of the wool, and in the quality and quantity, in proportion to the offal, of the mutton, by no other method than that of selecting the finest animals, generation after generation, for parents, until a breed is established, and then by breeding within that breed—avoiding too close and direct a consanguinity of the individual animals—would be entirely incredible, were it not established beyond the possibility of doubt by innumerable experiments. No one, looking at one of the improved Bakewell breed of sheep, not cognizant of the fact, would believe that it was nothing more than the old, coarse, long, shaggy-wooled native sheep, with no cross of any other stock, merely purified by exclusion of faulty, and selection of excellent, types of the family as progenitors, any more than he would believe that a foxhound or greyhound of the highest class was merely an improved wolf. Yet so it is. And so it would be with any other race of animals, from man downward, if none but the finest and most perfect specimens were allowed to interbreed and produce offspring. It was formerly believed that all inbreeding is injurious in all animals, but late experience, which also corresponds with nature and natural history in this point, goes to show that, in gregarious animals, crossing directly sire to offspring, for 2 or even 3 generations, though the latter is not desirable, is beneficial rather than detrimental. But after that number of crosses, the further one can get away from the original blood in crossing the better, as is, again, analogous to the habits of the animals in a state of nature. After many out-crosses it has been recently proved that a return to the original strain, or to an in-crossing, as it is technically termed, often produces results the most extraordinary. Such is the history of the improvement effected, within the last half century, on the American race-horse, by the new-old English blood of the Sir Archy, Messenger, and more recent

fashionable English strains, interfused into the old Virginia blood, flowing originally from the same identical sources, but too long bred in and in, among cousins and second cousins, without reverting to the old stream, at first hand. In horse-breeding, size, form, bone, and constitution, of whatever family of horse, must first be regarded; then blood, and then performance. All are hereditary—virtues, vices, malformations, defects, diseases, power to go, and power to endure. Above all things, one must never expect to produce a perfect animal from the union of 2 imperfect animals, or of a perfect and imperfect one. To breed a mare with excellent hind quarters and bad fore legs to a stallion excellent before and bad behind, will, in 9 cases out of 10, result in the production, not of a creature good, but of one bad, all around. So, to breed undersized females to gigantic males, or vice versa, in the hope of arriving at a medium of excellence, is an absurdity; the produce will generally be out of proportion somewhere or other, rickety, and deformed. To produce the best stock, the best parents must be chosen. Still, where an animal of great excellence in most points is slightly defective in some one, yet not so much so as to affect its general prospects as a stock producer, it will be advisable to select for the other parent an animal particularly strong in the defective point. The excellence of the one may correct the deficiency of the other. If both parents be bad in the same point, it is a thousand to one that the progeny will be worse than either in that point. In raising the cold-blooded races of the horse by admixture of thorough blood, it must be always borne in mind that, in order to do good, the blood must be on the side of the male, the size and beauty on that of the female, though, of course, both had better be large and beautiful. But in no case are races of animals improved by breeding females of a superior to males of an inferior race or blood. The progeny of a thoroughbred stallion and a half-bred mare will, 99 times out of 100, beat that of a half-bred stallion and a thoroughbred mare, as easily as one of the full blood will beat either of the half-bred.

BREESE, MARY, an eccentric English woman, born at Lynn in the county of Norfolk in 1791, died there in 1799. Her ruling passion was hunting, and at her request her dogs and favorite mare were killed after her death and buried in the same grave. She regularly took out a shooting license, was as sure a shot as any man in the county, and no pack of greyhounds could be compared to hers.

BREGENZ, the smallest of the circles into which the Tyrol is divided, formed in 1849, and comprising the Vorarlberg territory. Area, 987 sq. m.; pop. 108,800. It is a well-watered, mountainous tract of country, producing abundance of fruit and wine, but little grain. The principal rivers are the Rhine, the Iller, the Lech, and the Bregenz.—The capital of the circle of the same name, Bregenz,

or Bregentz, is situated on Lake Constance, near the mouth of the Aach, is well built, and has considerable trade. Wooden houses, ready made for the Alpine districts of Switzerland, and vine-poles for the vineyards on the lake, are exported in large numbers. Pop. 4,000. The treaty between Austria, Württemberg, and Bavaria against Russia, was concluded here Oct. 12, 1850. A conference for the regulation of the navigation was held here in Oct. 1855.

BRÉGUET, ABRAHAM LOUIS, a Swiss watch-maker, born at Neufchâtel, Jan. 10, 1747, died Sept. 17, 1823. He established a manufactory in Paris, and acquiring a high reputation, he was appointed chronometer-maker to the navy, member of the bureau of longitudes, and at last member of the institute. His pocket chronometers, marine timepieces, sympathetic pendulums, metallic thermometers, and mechanism of telegraphs, as established by Chappe, attest his inventive skill and industry.

BREHAR, or BETHER, one of the Scilly islands; pop. 2,500, mainly fishermen. It contains some druidical remains.

BRÉHAT, a small island of France, in the English channel. It is about 8 miles long and 2 miles broad, lies about a mile from the mainland, and has a lighthouse and 12 small batteries.

BREISGAU, an old division of Germany, in the S. W. of Swabia. For a long time it was under the authority of the counts of Breisach. It was afterward added to the Austrian dominions, and in 1806 was ceded to Baden, Switzerland, and Württemberg, Baden receiving the largest portion.

BREISLAK, SCORPIONE, an Italian geologist, of German parentage, born in Rome, 1748, died at Turin, Feb. 15, 1826. He was professor of physics and mathematics at Ragusa, and went to Paris to study natural history; published *Topografia fisica della Campania*, and a variety of geological treatises, and bequeathed his mineralogical cabinet to the Borromeo family.

BREITENFELD, a village of Saxony, 4 miles from Leipsic. During the 30 years' war, it was the scene of 2 Swedish victories, the one gained Sept. 7, 1631, and the other Oct. 23, 1642. A monument, in honor of the first victory, has been erected on the battlefield.

BREITHAUPT, JOACHIM JUSTUS, a German evangelical divine, born at Nordheim in Hanover, in 1658, died March 16, 1732. He was professor of theology at Halle, from 1691 to 1705. He wrote several hymns of remarkable beauty, which were adopted by the Moravians, and through John Wesley's admirable translations have passed, with various mutilations, into almost all hymn books used in the U. S.

BREITKOPF, JOHANN GOTTLIEB IMMANUEL, a learned German printer, born in Leipsic, Nov. 23, 1719, died Jan. 28, 1794. His father united the business of bookselling with printing and type-founding, and was anxious to bring up his son to his own occupation. The latter wished to obtain a liberal education, but while pursuing his college studies rendered important aid in the

industrial operations of his father. He finally determined to devote himself entirely to the improvement of the art of printing. He changed the form of the types then in general use, and in other respects introduced a better taste into German typography. Some of his innovations, as his plan of printing music, geographical maps, and portraits with movable types, were not successful, but he rendered important services in the composition of type-metal, and the construction of presses. He wrote an essay on the "History of Printing," and labored for several years on a more elaborate work on the same subject, which he did not live to complete. His printing-office and foundry, at the time of his death, were among the largest in Germany.

BREMEN, one of the 4 free cities of Germany, on the Weser. Area of the whole Bremen territory, 110 sq. m.; pop. in 1856, 88,856, comprising a country population of 19,480, the towns of Vegesack and Bremerhafen in the Hanoverian territory with a population of 9,289, and Bremen itself with a population of 60,087, chiefly Protestants. The city is better built than most other German cities, and on the site of the old fortress are delightful pleasure grounds. The new and the old city, on opposite sides of the river, are connected by 2 bridges. Among the noteworthy buildings are the cathedral, built in 1050 by Archbishop Adalbert, with a tower 324 feet high, and a vault (*Bleikeller*) which has the property of preserving free from decomposition, after the lapse of ages, several bodies interred in it; the church of St. Anscarius; the council-house, with the celebrated wine-cellar and casks, called the rose and the 12 apostles, filled with fine hock, some of it a century and a half old, at one time valued at \$3 per glass; the Roland statue, the public square called the *Schütting*, the theatre, the post-office, the exchange, and the museum. The statue of Gustavus Adolphus was placed in one of the public squares in 1856. Among the public buildings must be mentioned the commercial school, the 3 orphan asylums, the new infirmary, the naval academy, the institution for deaf mutes, the normal school, the drawing school, the *Kunsthalle*, the observatory (founded by the astronomer Olbers, a native of the town, to whom a monument was erected in 1850), the city library, and the gymnasium. There are 11 printing establishments, 8 publishing houses, several reading-rooms, about 60 schools, many benevolent institutions, various literary periodicals, and a number of political journals, of which, the *Bremer Zeitung* and the *Weserzeitung* are the best. The town, however, is chiefly important as a great commercial emporium. In 1857 Bremen owned 271 vessels, of about 12,000 tons, and 120 coasting and lightering vessels of 4,000 aggregate tonnage, and employed, beside 2 steamers which ply between New York and Bremen, and carry the mail, over 100 vessels under the flag of Hanover and Oldenburg. The arrivals in 1856

were 2,958, and the clearances 8,110 vessels. The intercourse with the United States forms a principal item in the commercial activity of Bremen, the exports to the United States, during the year ending June 30, 1856, amounting to \$11,846,580, and the imports from the United States, in the same period, to \$10,281,451. The aggregate value of imports and exports, to and from all parts of the world, in 1857, amounted to \$45,000,000. Bremen is the principal continental, and next to Liverpool the greatest European shipping port for emigrants, chiefly to the United States. Their number was in 1843, 9,844; 1844, 19,868; 1845, 81,153; 1846, 82,372; 1847, 33,628; 1848, 29,947; 1849, 28,629; 1850, 25,888; 1851, 87,493; 1852, 58,551; 1853, 58,111; 1854, 76,875. The commercial ascendancy of Bremen is further promoted by the practice of the merchants of sending their sons to establish themselves in foreign countries. Bremen merchants enjoy a world-wide reputation for commercial genius and integrity. The Weser becoming too low from year to year, in spite of all efforts in dredging it, it became necessary in 1830 to abandon Vegesack, which since the 16th century had been the port for larger vessels, for Bremerhafen, which then was built on territory bought of Hanover, and in 1850-'54 provided with a grand dock and basin, at a cost of over \$1,200,000. By a treaty, concluded in 1853, Hanover undertakes, until 1863, the military defence of Bremerhafen at the annual rate of \$2,500. The railroad connecting Bremen with Hanover, Berlin, Düsseldorf, Cologne, and the interior of Germany, was finished in 1850; another is building to Bremerhafen. There is a merchants' exchange, a bank of issue, a discount bank, several insurance companies, a commercial court, and public institutions for the security and comfort of emigrants. A Lloyd for northern Germany (*Nord-Deutsche Lloyd*), after the plan of the *Lloyd Austriaco* of Trieste, was founded in 1856. Shipbuilding is carried on to a greater extent than in any other German port, rivalling even English and American constructors, if not in swiftness and size of the vessels, at least in solidity. Bremen sailors enjoy a high reputation, and the captains are noted for their skill and good sense. Sugar refineries, iron foundries, lard-boiling, manufactures of oil, soap, and sail-cloth, and cotton-spinning, are also carried on; in the manufacture of cigars more than 4,000 persons are employed, the annual exportation exceeding 300,000,000 cigars, valued at \$2,000,000; the increase of the duties on raw tobacco, of which the importations average more than 24,000,000 lbs., tends, however, to diminish the production.—Bremen was founded by Charlemagne in 788, and endowed with a bishopric, and in 1050 became an archiepiscopal see. In the course of time the city increased in strength, wrested the temporal power from the hands of the church, and becoming one of the early participants in the league of the Hanse

towns, it conquered a number of Norwegian and Livonian ports, subduing and christianizing by fire and sword the whole of Courland and of Livonia. It founded Riga in 1158, took part in the conquest of Prussia, extorted commercial privileges from all ports between Bremen and Amsterdam, from England and Flanders, and subjected to its control a large strip of land on both banks of the Weser, since then called the duchy of Bremen. In common with Hamburg, it purged the North sea of pirates. It was one of the earliest cities to decide for Protestantism, but religious dissensions within the city, looking to the adoption of the Calvinist creed, and finally the 30 years' war, brought it under Swedish and afterward under Hanoverian sway, other causes conspiring against its prosperity. In the Napoleonic wars, when the city suffered much, the Bremen volunteer militia was among the earliest and bravest defenders of German independence.—Bremen has one vote in the larger council of the German confederation, and, together with Hamburg, Lübeck, and Frankfort-on-the-Main, one vote in the smaller council of 17. The legislative power is vested in the senate, which is composed of 16 members, elected for life, and in an assembly of citizens of 150 members. The executive is represented by 2 burgomasters, who are members of the senate. The present burgomasters are Karl Friedrich Gottfried Mohr, whose term of office expires Dec. 31, 1861, and Arnold Duckwitz, whose term expires Dec. 31, 1863. The latter functionary is also president of the senate for the year 1858, his colleague having filled that office in 1857. The negotiations, opened with a view of inducing Bremen to join the German customs' union, have not yet been successful. Among the recent enactments of Bremen is a law passed Dec. 20, 1854, in favor of the emancipation of the Jews, the only remaining restriction being that some caution shall be used by the government before granting to new Jewish residents the rights of citizenship. Estimate of the budget in 1857: receipts, \$644,817; expenditures, \$653,018; public debt, \$4,000,000 to \$4,500,000.

BREMER, a new county in the central part of Iowa, with an area of 430 sq. m. The climate is said to be healthy, and the land of good quality, well watered, and abundantly supplied with timber. The productions in 1856 were 2,090 tons of hay, 17,453 bushels of wheat, 116,516 of Indian corn, 20,634 of oats, 18,827 of potatoes, and 31,193 lbs. of butter. Capital, Waverly. Pop. in 1856, 8,228. The county was first settled in 1848-'49. Named in honor of Fredrika Bremer, the Swedish authoress, who spent some time in this region in 1850.

BREMER, FREDRIKA, a Swedish novelist, born near Abo, in Finland, in 1802. Her family removed, while she was a child, to the province of Scania, in Sweden; subsequently she spent some time in Norway in the house of her friend, the countess Sonnerhjelm; officiated next as teacher in a female seminary at Stock-

holm; and afterward travelled extensively in Germany, England, and the United States. Her novels have been translated into English, German, French, and Dutch, her reputation depending chiefly upon the "Neighbors," of which a 5th edition of the German translation appeared in 1850. The most complete German collection of her works is that published at Leipsic, comprising 20 vols., from 1841 to 1853. On her tour to the United States in 1850-'51, Miss Bremer was received with great cordiality, and the work which appeared from her pen in 1853, on the "Homes of the New World," was evidently written under a strong impulse of gratitude and affection. This work, translated into English by Mary Howitt, has had a large circulation in the United States. A German translation appeared at Leipsic, 1854-'55. Her "England in 1851" appeared at Altona in 1852, and her new novel, "Hertha," was brought out in 1856.

BREMERHAFEN, a town, situated on the estuary of the Weser, at the mouth of the Geeste, in the Hanoverian territory ceded in 1827 to Bremen for the accommodation of large vessels connected with its trade, is garrisoned by Hanoverian troops, and defended by the Hanoverian fort Wilhelm, which stands on the opposite side of the river. It consists of an outer harbor, a sluiced dock, and an inner harbor. An establishment was opened here by the authorities of Bremen, in 1850, which accommodates more than 3,000 emigrants. Pop. in 1856, 5,496.

BREMgarten, a circle in the Swiss canton of Aargau, and a town of the same name, on the Reuss. Pop. of the circle 18,100, of the town 1,800. From 1793 to 1795 Louis Philippe lived here in concealment under the name of Corby, while his sister and Madame de Genlis found refuge in a nunnery.

BRENDITZ, a village of Moravia, 2 miles from Znaim. During the battle of Znaim, in 1809, it was the headquarters of the archduke Charles. The imperial porcelain manufactory of Vienna is supplied with clay from this vicinity.

BRENNER, a mountain of Austria, in the Tyrol, between the Inn, the Aicha, and the Adige, 6,788 feet high. The road from Innspruck to Brixen crosses this mountain at an elevation of 4,650 feet.

BRENNUS, the leader of the Senonian Gauls, who defeated the Romans at the Allia, and took Rome, 382 B. C. Having quitted the city upon receiving a ransom for the capital, he returned home with his gold. A popular legend, however, relates that another army appeared at the moment the gold was being weighed, defeating and slaying Brennus and his followers.—Another warrior of the same name was chief leader of the Gauls, who made an irruption into Greece and Macedonia, 279 B. C. Having defeated, in the following year, Ptolemy Ceraunus, and afterward Sosthenes, the Grecian chief, who succeeded the Macedonian king, he invaded the south of Greece,

but was defeated at Delphi with great loss, and subsequently died by his own hand.

BRENTA (anc. *Medoacus*, or *Meduacus Major*), a river which rises in the Tyrol, traverses Lombardy, and after passing Dolo, and feeding a number of canals, joins the Bacchiglione. The canal of Brentelle connects it with the Bacchiglione at Padua. The Brenta Morta canal, of Brenta, called in its lower course the Brenta Magra, receives its waters at Dolo, and in its turn supplies the Brenta Novissima, which communicates with the Brenta river (here called Brenta Nuova) near Brondolo, and through it and its affluent, the Bacchiglione, enters the Adriatic after a course of 90 miles.

BRENTANO, **OLEMENS**, brother of Bettina von Arnim, a German novelist and dramatist, born in Frankfurt-on-the-Main, in 1777, died at Aschaffenburg, June 28, 1842. His writings are sparkling and brilliant, but morbid and eccentric. His comedy, *Ponce de Leon*, is the most witty and amusing, and his *Gründung Prag* the most powerful and comprehensive of his plays. His smaller works are readable, especially his *Geschichte vom brauen Kaspar und schönen Annerl* (Berlin, 1851). His fairy tales, published by Guido Görres, in 1848, include his satire of *Gokel, Hinkel, und Gakeleia*. In conjunction with his brother-in-law, Achim von Arnim, he published a collection of German national and popular songs, under the title of *Des Knaben Wunderhorn*.

BRENTFORD, a market town of England, and the nominal capital of the county of Middlesex. It is situated on the Thames, is connected by a bridge with Kew, on the opposite side of the river, and stands on the line of the Great Western railroad. The river Brent, also crossed by a bridge, divides the town into Old and New Brentford. Pop. of the former, 5,058; of the latter, 2,068. Although usually considered the county town, it has little to distinguish it as such. The parliamentary elections are held here, but the magisterial business of the county is transacted at Olerkenwell. It has some trade, which is facilitated by the Grand Junction canal, which connects with the Brent river. The town is indifferently built, mainly on one long paved street, and its condition frequently justifies the appellation bestowed upon it by the poet Thomson, of "a town of mud."

BRENTON, **EDWARD PELHAM**, captain in the British navy, born July 18, 1774, died April 6, 1839. He was on active service during the war, 1798-1815. He wrote a life of the first earl St. Vincent, and a bulky "Naval History of Great Britain from 1788 to 1822." He also founded the "Children's Friend Society," by whose aid hundreds of young people of both sexes have been rescued from want and vice, and enabled to live by virtuous exertion.

BRENZ, **JOHANN**, a Lutheran reformer of the 16th century, born 1499, died 1570. He was one of the authors of the *Syngramma Suevicum*, bearing upon the controversy with Zwingli and Ocolampadius, on the subject of the Lord's sup-

per. He was the most resolute among the opponents of the interdict of Charles V., escaping death only by resorting to flight.

BRESCIA, a province of Lombardy, bounded N. by Bergamo and Tyrol, W. by Verona and Mantua, S. by Cremona, E. by Lodi and Bergamo. Area, 1,800 sq. m.; pop. 850,000. The fertility of the soil is favorable to the choicest productions, and one of the most important branches of industry is the trade in silk, of which 1,000,000 pounds are annually produced; the number of silk manufactories is 27, and of silk weaving establishments 1,046. About 70,000 lbs. of very superior wool are raised annually, and there are not less than 45 woollen manufactories, 40 manufactories of woollen and cotton goods, 18 of cloth, 27 of gold, silver, and bronze, 13 of hardware and porcelain, 7 printing establishments, 187 manufactories of iron and other metals (Brescia steel enjoying a world-wide reputation), and 77 of fire-arms and weapons, the excellency of which gave to Brescia, in former times, the name of *l'Armata*. Butter, cheese, wheat, maize, hay, flax, chestnuts, oil, and wine, afford additional elements of prosperity. The trade of the province is principally carried on in the capital of the same name.—The town (anc. *Brixia*) has a population of 40,000, and is situated on the rivers Mella and Garza, at the foot of a hill. The strong castle on the top of the hill was in former times called the falcon of Lombardy. It is a well-built, pleasant, and animated town, noted for its abundant supply of fountains, of which there are not less than 72 in the streets and squares, beside some 100 in private houses. The ancient cathedral, and the other churches, contain many paintings of the great Italian masters. The new cathedral, or *Duomo Nuovo*, was begun in 1604, but the vaulting of the cupola was only completed in 1825. The chief ornament of the church of Santa Afra is "The Woman taken in Adultery," by Titian. There are, on the whole, over 20 churches, all noted for their treasures of art. Among the remarkable public buildings, is the *Palazzo della Loggia* in the *Piazza Vecchia*, intended for the town hall, the beautiful façade of which suffered much from the bombardment in April, 1849. The Palazzo Tosi was presented to the town by Count Tosi, and contains, among many famous pictures, the celebrated "Saviour," by Raphael. The picture galleries in the Palazzo Averoldi, Fenaroli, Leochi, Martinengo, and in other palaces, are equally noted for their artistic attractions. A whole street, *Il Corso del Teatro*, has the fronts of the 2d stories decorated with scriptural, mythological, and historical paintings. The *Biblioteca Quiriniana*, founded in the middle of the 18th century by Cardinal Quirini, contains upward of 80,000 volumes, beside a vast collection of curious manuscripts and objects of antiquity. The most unique monument of Brescia is the cemetery (*Campo Santo*), the finest in Italy, built in 1810, consisting of a semi-circular area in front, surrounded by tombs, and a row of

cypresses. Brescia is the seat of the provincial government, of a bishopric, of a tribunal of commerce, and of other courts of law. There are various charitable institutions, a theological seminary, 2 gymnasiums, a lyceum, a botanical garden, a cabinet of antiquities and one of natural history, an agricultural society, several academies, the philharmonic being one of the oldest in Italy, a casino, a fine theatre, and a large booth outside of the town for the annual fair—a period of great activity and rejoicing. The weekly journal of Brescia is called *Giornale della provincia Bresciana*. A Roman temple of marble was excavated in the vicinity in 1822. Brescia is connected by railway with Verona, and other Italian cities. The town is supposed to have been founded by the Etruscans. After the fall of the Roman empire it was pillaged by the Goths, and eventually passed into the hands of the Franks. Otto the Great raised it to the rank of a free imperial city, but the contests between the Guelphs and the Ghibellines became a source of trouble to the town. Having been for some time under the sway of the lords of Verona, it fell in 1378 into the power of the Milanese. In 1426 it was taken by Carmagnola; in 1438 besieged by Piccinino; in 1509 it surrendered to the French; in 1512 it was captured by the Venetian general Gritti, but eventually liberated by Gaston de Foix. Subjected to 8 more sieges during the 16th century, it remained in the possession of Venice until the fall of that republic. During the Napoleonic era it was the capital of the department of Mella. In the revolution of 1849, the Brescians rose in arms against the power of Austria, to which they had been subjected since 1814. The town was bombarded, March 30, by General Haynau, and held out until the noon of April 2, when it was compelled to surrender, and to pay a ransom of \$1,200,000, in order to avert utter destruction.

BRESLAU (Polish, *Wroclaw*), the capital of Prussian Silesia. Pop. in 1858, 127,000 (including 6,000 soldiers), all Protestants, excepting 9,000 Jews and 37,000 Catholics. It is situated at the junction of the river Ohlau with the Oder, which is navigable from Breslau down for large boats, and some distance up for smaller ones. It is the second city in size and importance in Prussia. It is connected by railway with Oracow, Warsaw, and Vienna, with Liegnitz, Berlin, Leipzig, with Schweidnitz and the rich manufacturing and mining districts of the Riesengebirge. The Posen railway connecting Breslau directly with the Baltic was opened in 1857. It is an important emporium, has about 100 mercantile establishments, large annual fairs, and is the most considerable wool market in the world. From 90,000 to 100,000 cwt. of the finest Saxony wool, of an approximate value of \$6,000,000 to \$8,000,000, are sold annually. All the immense agricultural, manufacturing, and mineral produce of Upper and Middle Silesia comes to its market; the trade in cotton and linen goods being over \$6,000,000, in metals

over \$9,000,000, in spirits nearly \$2,000,000, in broadcloth, glass, paper, grain, dyestuffs, wood, and minor articles, over \$15,000,000, and in coal over \$4,000,000 annually. In the city itself there are manufactories of dyed goods, and of leather, needles, liquors, refined sugar, tobacco, oil, cotton, linen, fine iron, gold and silver ware, broadcloths, laces, earthenware, straw hats, beer, vinegar, &c. There are a royal bank, a city bank, many private bankers, an exchange, and a commercial court. The town is well built, and has a circumference of 11 miles. It has many remarkable buildings, of which we may mention St. Elizabeth's church, built about 1250, with a tower 854 feet high, and a celebrated organ, the church of Mary Magdalen, with 2 towers, the Reformed church, the Catholic cathedral, with many monuments of the 18th century, the *Sandkirche*, the church of St. Dorothea, the *Rathhaus*, a fine old monument of architecture, the university building, the royal palace, the new hall of the diet, the Jesuits' college, now belonging to the university, the residence of the prince archbishop, the theatre, the palace of Count Henkel, and the new railway depot which was opened in 1857. The market place, with the statue of Frederic the Great, and the Blücher place, with that of Blücher, are worthy of notice. The streets are well paved and broad, with granite sidewalks, and lighted with gas. There are over 60 lithographic and musical establishments, and various literary magazines and weekly publications, and 3 daily political journals of large circulation, namely, the *Breslauer Zeitung*, the *Schlesische Zeitung*, and the *Neue Oderzeitung*. The benevolent institutions are more numerous and better provided than in most cities of Germany. There are 4 gymnasiums, 80 grammar schools, and several high schools for boys and girls, a seminary for classical, and one for popular teachers, an architectural and artistic academy, and a university with a library of 850,000 volumes, and many manuscripts. In the winter term of 1857-'58, there were 721 students. Among the professors who have acquired distinction in different branches of study at the university of Breslau may be mentioned Ritter, Theiner, David Schultz, Öhler, Nees von Esenbeck, Schneider, Passow, Branis, Boguslawski, Bredow, and Siebold. There is a missionary and a Bible institution, and the Leopold's or imperial society of naturalists, under Kieser's direction, has its seat here. There are 4 large libraries beside that of the university, with perhaps 500,000 volumes, several small but valuable picture galleries, a numismatic cabinet, 18 hospitals, and 4 orphan asylums. Schleiermacher was born here, and Blücher died within 14 miles of the city.—Breslau is built on Slavic territory, the original tribe being Poles; it was founded about 1000. When, in 1163, the surrounding territory was separated from Poland by the emperor Frederic I., who intervened in a quarrel of the sons of the Polish duke Wratislav, and made 2 of them, Konrad and

Boleslaw, independent dukes of what is now Silesia, a city charter was given to Breslau, which was already inhabited by a large population of Germans. After the death of the last-named Silesian duke, in 1385, it came into the possession of the Bohemian kings, and with Bohemia, in 1526, into that of the Austrians, until Frederic the Great wrested it from them by the invasion of 1741, and the 7 years' war. Like all Silesia, it shared the good and bad fortune of Bohemia in the 14th, 15th, and 16th centuries, and succumbed in 2 attempts of the citizens to make themselves independent of the archbishops and the patrician families. It never became a free German or Hanse town, in spite of its commercial importance. It early embraced the reformation. In 1742, the first peace between Frederic the Great and Austria was concluded here. In 1757 the Austrians conquered near the city a weaker Prussian army, but were driven out again in the same year by Frederic's victory at Leuthen. In 1760, Tauenzien bravely defended the town against Laudon's besieging army. In 1806-'7, it was beleaguered by the French under Vandamme, taken, and the fortifications demolished. In 1813, the king of Prussia sent out hence the first armies for the war of independence against Napoleon. In 1848 Breslau was an important revolutionary focus, and had a severe street fight with the Prussian army, May 2 and 3, 1849.

BRESSA, or BRESSAY, one of the Shetland islands. It supplies Lerwick with peat, and the whole of Shetland with slates. Bressay sound, which lies between this island and the mainland, is a place of rendezvous for English and Dutch herring-boats and whalers.

BRESSANI, FRANCESCO GIUSEPPE, an Italian missionary to Canada, born in Rome, 1612, died in Florence, Sept. 9, 1672. He labored during 9 years among the Hurons, when he was captured and ill-treated by the Iroquois, and afterward sold to the Dutch and kept in bondage until 1644, when he was ransomed. On his return to Italy, he published a book on the Jesuit missionaries in Canada.

BRESSON, CHARLES, comte de, a French diplomatist, born in Paris, toward the close of the 18th century, died by his own hand, in Naples, Nov. 2, 1847. His father was one of the chief clerks in the department of foreign affairs, and he early entered upon the same career. During the restoration, he was sent on a special mission to the republic of Colombia. After the revolution of 1830, he became a devoted and confidential servant of Louis Philippe. He announced to the Swiss republic Louis Philippe's accession to the throne, was then first secretary to the legation in London, and was delegated to communicate to the provisional government of Belgium the decisions of the London conference. He was intrusted by Louis Philippe with the duty of explaining the circumstances which prevented the duke of Nemours from becoming king of Belgium, and arranged the marriage of the princess Louise of Orleans with Leopold. He was chargé d'affaires

and afterward minister in Berlin. In 1834 he was made secretary of foreign affairs, and afterward sent again to Berlin as ambassador. During this embassy, in 1837, he negotiated the marriage of the duke of Orleans with the princess Helen of Mecklenburg, on which occasion he was created peer and count. As peer, he made a celebrated speech in the chamber sustaining the project of surrounding Paris with fortifications. In 1841 he was made ambassador to Madrid, where he baffled the English policy, and brought about the Spanish marriages, namely, of the duke of Montpensier with the infanta Luisa, younger sister of Isabel II., and, as the result of the former, the marriage of the queen herself with her first cousin, the Infante Francisco de Assis. No children being expected to result from the queen's marriage, the succession to the Spanish throne was thus held open to the duke of Montpensier or to his descendants. For this negotiation Bresson was created a grandee of Spain of the first class. Recalled to Paris, he was ambitious to receive the embassy to London. In this, however, he was disappointed, Louis Philippe sending him, in 1847, as ambassador to Naples. The king of Naples, whose hope of securing the hand of a Spanish princess for one of his brothers had been frustrated by the negotiations of Bresson, received him in the most offensive and vindictive spirit, and the affront, preying upon a mind already smarting under the humiliation inflicted upon it by Louis Philippe in withholding from him the London embassy, had such an effect upon him that he killed himself.

BREST, a fortified town, 370 miles W. S. W. from Paris, in the French department of Finistère, on the coast of France, the chief station of the French marine, and one of the first military and naval ports in Europe. Including its suburb Recouvrance, it is about 8 miles in circuit, and is surrounded with ramparts planted with trees. Its outer harbor is unsurpassed for safety, and is exceeded in extent only by those of Constantinople and Rio Janeiro. It communicates with the sea by a single long and narrow passage, divided by a rock in its centre, so that vessels are obliged to pass immediately under the batteries. Its inner harbor can accommodate 60 frigates, and is most strongly fortified. Brest is divided into the upper and lower towns, which are connected by steep streets, or, where the declivity is most rapid, only by stairs. The prison for galley slaves is the largest in France, containing about 3,000 convicts. It has a naval school, communal college, public library, and botanic garden. Brest was first rendered formidable by Cardinal Richelieu, and in 1694 it withstood a combined attack of the British fleet and army. Municipal pop. 41,512; total pop. with military and convicts, 61,160. Entrances of vessels in 1858, 95, with 12,470 tons; clearances only 2 vessels, with 194 tons, all others in ballast. Entrances of coasting vessels in the same year, 1,612, with 58,854 tons; clearances, 3,901, with 89,104 tons.

BRETEUIL, LOUIS AUGUSTE LE TOUXEIL, baron de, a French statesman and diplomatist, born in 1733, died Nov. 2, 1807. He was minister plenipotentiary to the court of Cologne in 1758, and was afterward sent successively to St. Petersburg and Stockholm, and at a later period to Holland, Vienna, and Naples. In 1788 he became a member of the government, and effected various beneficial changes in the management of the national prisons. When the revolution broke out, he endeavored to moderate its violence, and to save from the fury of the multitude the magnificent buildings and monuments of the French metropolis.

BRETHREN, WHITE, a transient sect of the 15th century, an outgrowth of that remarkable religious enthusiasm which characterized the latter half of the 14th and the beginning of the 15th century, and which may be said to have culminated about that time. The White Brethren first appeared in the Italian Alps, and were headed by a priest of uncertain origin, probably a Spaniard, though some say he was a Provençal, and others even that he was a Scotchman. Whoever he was, he seemed to have been willing to ignore himself, for he claimed to be the prophet Elias recently returned from a couple of thousand years' sojourn in Paradise. He and his followers were arrayed in white (whence their name), and carried around large crucifixes from which a bloody sweat appeared to exude. He claimed that it was his mission to announce the speedy destruction of the world by an earthquake. He commenced his prophetic ministrations in Lombardy, and thence extended them to the Ligurian Alps. So great was his success that he entered Genoa at the head of 5,000 followers. From Genoa, the enthusiasm rolled like a wave to Lucca, Pisa, and Florence, till its progress was arrested by the discovery of the imposture. The whole transaction occupied but a few months. He prescribed and practised mortification and penance with great rigor, and endeavored to persuade to a renewal of the holy war. Clement VI. had (1349) opposed such enthusiastic processions, which had been for some time in vogue. The church began to see that they were more potent with the people (for they were generally resorted to in time of some great public calamity, as the black death, which swept over Europe, 1348) than its own prayers and offices, and Boniface IX. put an end to the movement, by ordering the leader to be apprehended and burned.

BRETHREN AND CLERKS OF THE COMMON LIFE, a religious order which sprang up in the Netherlands near the close of the 14th century, led by Gerhard de Groot. It was divided into 2 classes, the lettered and the illiterate. The first class was mainly composed of the clergy, who gave themselves to study, and copying books, while the second class engaged in manual labor. They lived in common, so far as possessions were concerned, though they inhabited separate houses. They were sanctioned by the council of Constance in the 15th

century. There were houses also for sisters of the order. This order is frequently confounded with the Beguins and Lollards. They lived under the rule of Augustine. To them we owe the preservation of many valuable manuscripts.

BRETHREN OF THE CHRISTIAN SCHOOLS, an order established at Rheims by the Abbé de La Salle in 1679, and sanctioned by Benedict XIII. in 1725, 6 years after the death of the founder. The object of the order was to provide instruction for the poorer classes of the population, and hence the name. The members of the order take upon themselves the vows of chastity, poverty, and obedience. These vows are first taken for 3 years only, and then renewed for life by those who desire to remain in the order. Their costume is a coarse black cassock, and a small collar or band around the neck, for the house, and a hooded cloak and a wide hat for out-door purposes. Their diet is of the simplest kind. Their teaching is mainly rudimentary, although in some of their schools Latin and the higher mathematics form part of the course. Priests may be admitted to the order, but no member may become a priest, and lest they should aspire to that dignity, the brethren are forbidden to study Latin until reaching the age of 80. In 1688 the order was introduced into Paris. In 1792, they refused to take the oath to the civil constitution, and were driven from their houses, and debarred the exercise of their functions. At the peace of 1801, they returned to their schools, and soon spread themselves again over France, whence they extended into Italy, Corsica, Cayenne, Belgium, and Algiers. They are exempt from military duty in France. In 1830, in the revolution of July, the persecution which fell upon the Jesuits also visited them. The aid of government was withdrawn. At that epoch, they opened evening schools for adults, wherein they received and taught mechanics and other poor laborers, who had no time to devote to learning in the day. The brothers of the Christian schools have modified their instruction from time to time, to make it meet the wants of the classes whom they teach. Thus, in 1831, geometry in its application to linear drawing was introduced into their course. The following table shows the condition of the order in 1856:

	No. of Establishments	No. of Brethren	No. of Schools	No. of Pupils
France,.....	689	5,369	1,235	252,215
Belgium,.....	89	843	88	16,799
Savoy,.....	24	190	31	5,649
Piedmont,.....	16	313	38	6,045
Papal States,....	21	157	29	4,408
Canada,.....	16	188	20	6,449
United States,...	12	183	30	5,314*
Levant,.....	4	69	10	1,705
Prussia,.....	4	29	4	653
Malaysia,.....	2	8	3	240
Switzerland,....	1	9	1	398
England,.....	1	13	3	81
Total,.....	827	6,666	1,500	800,315

* No. of pupils in the U. S. in 1853, about 8,300.

The brethren of the Christian schools are sometimes improperly called the "Christian Brothers." The latter are a branch of the former, and have nearly the same rule and object, but form an independent order. They are very numerous in Ireland.

BRETHREN OF THE FREE SPIRIT, a sect which sprang up on the upper Rhine near the close of the 18th century. They are frequently confounded with the Lollards, Beguards, or Beguins. They held that the universe was a divine emanation; that man, so far as he gave himself to a contemplative life, was a Christ, and as such, free from law, human or divine (Romans viii. 2, 14). Many edicts were published against this sect, but they continued till about the middle of the 15th century.

BRETHREN OF THE HOLY TRINITY, a society, founded in France near the close of the 12th century, whose members pledged themselves to give a third part of their revenues to procuring the redemption of Christians who had fallen captive to the infidels, and were in Mohammedan slavery. It was established by John of Matha, a Parisian theologian, and Felix de Valois.

BRETIGNY, a village of France, on the Paris and Orleans railway. The French king John, who had been made prisoner at the battle of Poitiers in 1356, regained his freedom by a treaty between France and England, concluded at this place in 1360.

BRETON, JEAN BAPTISTE JOSEPH, for a long time the oldest journalist and stenographer of France, born in Paris, Nov. 16, 1777, died Jan. 6, 1852. His public career was nearly parallel with representative government in France. He was present as stenographer at the session of Aug. 10, 1792, when the power passed from the hands of an individual to those of an assembly; and of Dec. 2, 1851, when it passed from the hands of an assembly to those of an individual. His services were also in constant requisition at the courts as an interpreter for English, German, Italian, Spanish, Dutch, and Flemish suitors. He was a frequent contributor to the *Dictionnaire de la conversation*, and among other papers wrote the article on stenography.

BRETON LANGUAGE (Fr. *Bas Breton*), properly **BREIZAD LANGUAGE**, or language of the *Breizis*, is a dialect of the Celtic family, constituting with the Welsh its Cymric branch. The subdialects of this language are those of Léon, Tréguier, Vannes, and Oarnouailles. It has been more modified by the Latin than other Celtic tongues, owing to the length of Roman domination; it was also modified by settlers from Britain in the 8d and 4th centuries. It employs Roman letters, some of which (a, b, d, e, f, g, h, i, l, m, n, o, p, r, s, t, u, v) sound as in the ancient Latin, others (k, w, z) as in English, 3 (j, and the combination ch) as in French, and the combination c'h like the German ch (strongly guttural); l and n are sometimes what the French call *mouillés*, and r is sometimes nasal; w is also used as a vowel; the diphthongs are genuine and distinct. Some initials

of nouns and of verbs are altered after the finals of the preceding words, viz.: *b* to *v* and *p*, as *bds* (Lat. *baculus*), *ar eds*, the stick; *k* to *g*, *c'h*, as *ki* (canis), *ar c'hi*, the dog; *ker* (curia), *eur ger*, a city; *d* to *t*, *s*; *gw* to *kw*, *w*; *m* to *v*, as *mamm* (mater), *ar vamm*, the mother; *p* to *b*, *f*, as *penn*, head, *tri fen*, 8 heads; *t* to *d*, *s*; *s* to *z*. The definite article has 8 forms, *ann* before vowels and before *d*, *n*, *t*, *al* before *l*, *ar* everywhere else; the indefinite article also varies, *eunn*, *eul*, *eur*, in the same positions as the definite. Both are thus used in the singular and plural sense. The genitive is denoted by *eda*, the dative by *'d*, in both numbers. The plural is made by suffixing *ou* or *iou* (*aeil-ou*, winds; *brézel-ou*, wars), or *ien*, *ed*, *en* (*kaneri-en*, singers; *lben-ed*, animals; *stéred-en*, stars). Irregular are: *Breizad*, plural *Breizis*; *askourn*, bone, *askorn*, bones; *mbb*, son, plural *mipien*. There are 2 genders, masculine and feminine. The comparative degree is formed by *oc'h*, thus, *kabroc'h*, more beautiful; the superlative by prefixing the article, thus, *ar c'habra*, most beautiful. The numerals are: *unan*, 1; *daou*, 2; *tri*, 3; *pevar*, 4; *pemp*, 5; *c'houec'h*, 6; *seis*, 7; *eiz*, 8; *nno*, 9; *dek*, 10. The ordinals are made by suffixing *ved* (*trived*, 3d, &c.); these are irregular: *kenta*, 1st; *eil*, 2d. The personal pronouns are *me*, I; *te*, thou; *hen*, he; *hi*, she. The terminations of the verbs are, *ann* for I, *es* for thou, the radical for he, she, it, *omp* for we, *it* for you, *ont* for they; thus, *rb-ann*, *rb-es*, *rb*, *rb-omp*, *rb-it*, *rb-ont*—I give, thou givest, he, she, it gives, we, you, they give. The past tense is formed by *iz*, the future by *inn*, &c. Each verb is preceded by the particle *a* before nouns and pronouns, by *é* (or *ez*, *ec'h*) before adverbs. There are 3 auxiliary verbs, viz.: *deza*, to be; *kaout*, to have; *ober*, to do. There are some specific prefixes. The syntax is free, with some anomalies; thus, the 3d person singular of a verb may be joined to the 1st and 2d personal pronouns, as *me arb*, which is *I gives*, instead of *give*. We subjoin a short specimen: *Hon tad, pehini a so en eon, hoc'h ano dezet sanctiflet*; literally, "Father our, who is in heaven, your name be sanctified." Grammars have been published by Rostrenen (1738), Dumoulin (1800), Le Gonidec (1838); dictionaries by Rostrenen (1732), Le Pelletier (1752), Le Gonidec (1821).

BRETON DE LOS HERREROS, MANUEL, a Spanish dramatist, born at Guel, province of Logroño, Dec. 19, 1796. In early life he was in the army, and until 1840, when he was keeper of the national library, he officiated in various public offices. He is the author of miscellaneous poetry, his satirical poem on dramatic elocution being considered one of his best efforts. As a writer for the stage his lively and facile pen gained him the title of the "Spanish Eugène Scribe." He produced more than 150 plays, partly original, partly adaptations and translations from the French, and wrote several tragedies, one of which, the "Mérope," was received with favor. A complete edition of his works appeared at Madrid in 1850.

BRETSCHNEIDER, HEINRICH GOTTFRIED, a German writer, born at Gera, in Saxony, March 6, 1739, died near Pilsen, in Bohemia, Nov. 1, 1810. Entering the army in early life, he became a prisoner of the French. He obtained an official employment in Nassau; but his office being suppressed, he undertook in 1778 adventurous travels through France, Holland, and England. His account of this journey was afterward translated and published in "Blackwood's Magazine." Among his many productions is the "Horrible Story of the Death of young Werther," in which he ridiculed the Wertherism then prevalent in Germany.

BRETSCHNEIDER, KARL GOTTLIEB, a German theologian, born at Gersdorf, Feb. 11, 1776, died at Gotha, Jan. 22, 1848. He became general superintendent at Gotha in 1816, and was appointed superior councillor of the consistory in 1840. With an eminently rational mind, he constructed his theological system formally according to logical rules, and sympathized neither with the speculations of Schleiermacher and Hegel, nor with the sentiments which prompted pietism, mysticism, and German Catholicism. His principal work is a "Handbook of Dogmatics," which has had many editions. Among his other numerous works are several religious novels. He published valuable editions of the works of Calvin, Beza, and Melancthon. His autobiography was published in 1852.

BREUGHEL. I. PETER, the first of a celebrated family of Dutch and Flemish painters, born near Breda, in 1510, died in Brussels in 1570. He studied with Peter Koeck, travelled through portions of France, Italy, and Switzerland, making sketches, and went to reside at Antwerp, where, in 1551, he was made a member of the academy. From the whimsical character of his subjects, Peter Breughel has been called the "droll." He painted village festivals, attacks of banditti in wild landscapes, or scenes among the gypsies. **II. JAN**, eldest son of the preceding, commonly known as "Velvet Breughel," either from his habit of dressing in velvet, or from the softness and delicacy with which he painted flowers, born at Brussels in 1565, died in 1642. His first pictures were miniatures, and fruit and flower pieces, but after a tour through Italy he took to painting landscapes, which are remarkable for exquisite finish, and the spirit and character of the minute figures introduced into them. He returned to Flanders with so great a reputation as a landscapist, that artists frequently applied to him to paint backgrounds and other accessories to their pictures. In this way he assisted Rubens in the celebrated pictures of "Adam and Eve in Paradise," "The Four Elements," and "Vertumnus and Pomona," the figures of which were painted by the latter. **III. PETER** the younger, brother of the preceding, called "Hell Breughel," from the diabolical character of his subjects, born about 1569, died in 1625. His pictures generally represent scenes in which devils, witches, sorcerers, or robbers play a conspicu-

ous part. One of his most famous works is the "Temptation of St. Anthony."

BREVE, (Lat. *brevis*, short), in music, a note of the 8d degree of length. It is half the length of the *longa*, or long, which precedes it, and one quarter the length of the *maxima*, or greatest note of all, which is the longest used. With these two notes, however, it has almost entirely passed out of use, the modern German method of designation having substituted the semibreve, a note properly of half the duration of the breve, as unity, and applied to it the name of whole-note. The breve was formerly much used for choir service, and is generally of this form | ○ |.

BREVET, a French term, signifying a royal act conferring some honor or privilege. In England and the United States it is usually applied to military rank, and imports a commission giving a nominal rank higher than that for which pay is received; thus, a brevet major receives pay only as captain.

BREVIARY, a book containing the "canonical hours" or "divine office" which the Roman Catholic clergy and religious are obliged to recite every day, and which was formerly said by the laity likewise. The name, derived from the Latin *brevarium*, *brevis*, is supposed to have been given because the office now in use is an abridgment of one much longer. The origin of the breviary was different in different parts of the church. Thus the diocese of Antioch is said to have received it from Diodorus or Flavian, that of Constantinople from St. John Chrysostom, that of Milan from St. Ambrose (A. D. 386). Rome obtained it probably from Pope Gelasius I., in 494, and the churches of Spain from St. Leander, bishop of Seville about 620. These office books differed greatly both from one another and from the Roman breviary of the present day. In the course of time they became filled with legends of the saints of very doubtful authenticity, and many reforms were attempted, but without much success, until Pope Pius V. and the council of Trent established a uniform office for the whole church. This was subsequently corrected by Clement VIII. and Urban VIII., and is the one now in use. Before the council of Trent, however, Cardinal Quignon had published in France an expurgated and amended breviary, which, though condemned by the Parisian faculty of theology, was approved by Julius III. and Paul IV., passed through several editions, and for many years was generally used by the French clergy. In the Greek church, the office book is called *ραβίς* (order), *ἀπολογία* (dial), or *ευχολογία* (collection of prayers). It is very nearly the same in all the monasteries and churches, and is divided into 2 parts, one containing the morning, the other the evening office. The psalter is in 20 divisions, called *καθίσματα* (seats), because a rest or pause is made after each one. The Armenians and other nations have breviaries of like description.

BREVINE, LA, a parish and village of Swit-

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zerland. It has a population of 2,819, mostly engaged in watchmaking, the manufacture of lace, and working in metals. In the vicinity is a bed of coal, supposed to be the fossil relic of a forest which was swallowed up during an earthquake, September 18, 1856.

BREWER, ANTHONY, an English poet in the reign of James I. He was highly esteemed among the wits of his time, and is known to have written 6 plays. In one of these, called "Lingua, or the Five Senses," Cromwell is said to have acted when a youth at Cambridge.

BREWING, the manufacture of beer. Great attention is paid in Europe to the selection of the grain to be subjected to the first process in brewing, which is the malting. The most profitable barley is the rath, which is the earliest ripe. The grain must be full, round, heavy, and sweet, and of uniform quality, not a mixture of old and new; it should have sweated and seasoned in the stack. Other grains when used instead of barley should be selected with similar care. Any grains are suitable that contain a large proportion of starch. This is converted, as the seeds begin to germinate, into a fermentable sugar, that resembles cane sugar, first passing through the stage in which the substance is called dextrine, and from this, by the action of diastase, which is generated in the chemical change, it becomes sugar. Malted barley yields only about 1 part in 500 of diastase, but this is sufficient to saccharify 2,000 parts of dry starch. This action of diastase takes place only below the boiling point of water; from 158° to 167° F. is found the most favorable temperature. By the fermentation of the sugar the alcoholic portion of the beer is obtained. Thus it is explained why those grains which contain the largest quantity of starch are best adapted to the manufacture of beer. Malting is this germinating process, in which the starch is converted into sugar. The grain is first subjected to the operation called steeping. This is effected in large cisterns, in which the grain is covered with water, 6 or 7 inches above its surface. Forty hours is the usual period of this operation. If the water in this time shows any symptoms of fermentation, it must be drawn off, and replaced with fresh cold water. It is completed when the grain has absorbed so much water, that it is fully swollen, and is easily perforated with a needle. The gain in weight is often 47 lbs. to the cwt. of barley. The liquor is now drawn off, and the grain is left to drain for 6 hours. The next operation of the malting process is that termed couching. The grain is thrown upon a malt floor, in rectangular heaps of 12 to 16 inches in depth, called couches. In this condition it is quite dry, but in the course of a day it begins to grow moist and acquires a temperature 10° higher than that of the surrounding air. It gives out a pleasant fruity smell, and germination begins by the shooting out of the fibrils of the young roots from the tip of every grain. This takes place about 96 hours after the removal of the grain from the steep. The

rudiments of the future stem, called by the maltsters *acrospire*, begin to appear about a day after the germination of the rootlets. The germination must now be checked, and the couching be succeeded by the flooring operation, which is merely spreading the grain more thinly upon the floor, and turning it over with spades 2 or 3 times a day. The depth of the layer diminishes each time, till it is at last reduced to only 3 or 4 inches. Care is taken that the temperature shall not much exceed 62°. By the absorption of oxygen, and the emission of carbonic acid, the tendency is to an increase of heat considerably beyond this point. The *acrospire* or stem shoot creeps along under the husk of the grain from the end at which it appeared toward the other, from which it would burst forth in the form of a leaf, if the process were not stopped; but when the shoot has reached this end, and the gluten and mucilage have mostly disappeared from the grain, and this has become white and crumbly like meal, the flooring process is terminated, and the malt is now subjected to the last process, which is kiln-drying. The couching and flooring occupy a period of 2 weeks in England, but in Scotland, where the temperature is lower, 3 weeks are sometimes required. The grain is converted from starch into sugar as the *acrospire* moves along under its surface. One end is thus at one time mostly starch, and the other mostly sugar. If the vegetation were allowed to go on till the stem shoots forth, the grain would soon be exhausted of its saccharine properties. In the drying, the malt is spread in a layer upon the floor of the kiln from 8 to 10 inches deep, and kept at a temperature, till the moisture is mostly expelled, of about 90°, which is afterward increased to 140° or more. The malt should be frequently stirred up with spades during this process, which should last in all about 2 days. The malt has now acquired a pale amber or brown color, and is freed from the roots and *acrospires*, which have become brittle, and being broken off in the stirring, are separated by sifting. The grains are round, of a sweetish taste and agreeable smell, and are full of soft flour. The bulk is greater than that of the original barley, but the water gained in the steeping is all expelled, and a loss of weight is incurred, amounting to from 12 to 20 per cent., by waste and cleaning. The variety of color is due to the greater or less degree of heat employed in the drying. These distinctions of color continue through the brewing into the liquors produced, giving to them those peculiar properties which cause them to be distinguished as ale, beer, and porter. Ale is made from the palest malt; porter from the brownest, which is partially charred and acquires a bitter taste. The same effect is produced by mixing with the stronger liquor made of pale malt, the darkest-colored malts, or of using these together in mixtures called *grists*, while the agreeable taste is imitated by introducing quassia, cocculus indicus, or other bitter substances of simi-

lar character. This process of adulteration, however, is strictly forbidden in Great Britain, under heavy penalties by several acts of parliament. The liquor produced by mixing the different sorts of ale was found to be very strengthening, and became popular with the laboring classes, particularly the porters; hence its name.—The brewing process proper, like the malting, consists of several different operations. The first is the grinding or crushing of the malt to a coarse powder. This is best done between rollers of case-hardened iron. The mashing process succeeds this. The crushed malt is shaken into large mash-tubs, containing water at a temperature of 160°. In these it is thoroughly stirred up, with no more water than is sufficient to completely soak the malt. By this operation the sugar is partially dissolved, and what starch there may be unchanged is again subjected to the action of the diastase. After reposing a half hour, more water is introduced at a temperature of 194°, raising the whole to a temperature of about 167°. After remaining 2 or 3 hours, the sweet wort is drawn off into a lower vessel called a underback. Great care is required in running off the infusion, that it shall be clear, and free from any mixtures of finely divided grain. Its color should be the same as that of the malt employed. It is a solution of the saccharine matters principally, the mucilaginous and resinous not being yet dissolved. Water is again added to the mash-tub at a temperature of 194°, which is immediately reduced by the cool malt to 176°. This is drawn off and mixed with the first. The product of the 3d solution with water at the boiling temperature is not mixed with the other infusions, but is sometimes employed for wetting new malt, or it is used for making small beer. Great care must be used in introducing the water into the mash-tub at the proper temperature, and it is very questionable whether the high temperature of 194° at which the water of the second mashing is introduced, is not attended with the injurious effect of rendering the starch, albumen, and gluten with which it first comes in contact insoluble; though this temperature is immediately reduced, as already mentioned. Even the temperature of the surrounding atmosphere materially influences the result of the operation. Ingenious machines have been contrived to serve the double purpose of masher and attenuator. Descriptions of these, with full details of the manufacture, are given by Dr. Muspratt, in his work on chemistry; Dr. Ure also treats the subject very fully. The strength of the worts, or the proportion of saccharine matter they contain, must be accurately ascertained, that an article of uniform quality may be obtained. This is done by the use of a variety of hydrometer, which is called a saccharometer. By means of this, different worts are mixed in the proper proportions to produce the desired strength. The next process is boiling. This is done in large copper vessels, furnished with steam valves, which are contrived to retain

the steam at a temperature somewhat higher than 212°. In this process the hops are introduced, and the boiling of the mixture is continued with frequent stirring, effected by means of a rod passing through a stuffing box at the top of the vessel, and carrying at the lower end a horizontal bar, the whole being moved around by machinery. By the boiling, the liquor is concentrated, the albumen or mucilage is coagulated, and the glutinous matter is rendered insoluble by combining with the tannin of the hops. The proper use of the hops depends upon a thorough knowledge of the peculiar qualities of the beer, and its relations to the season, the time it is to be kept, and the climate for which it is designed. The exact qualities of the hops, also, should be well understood. More hops are required in warm than in cold weather, and different varieties of hops are selected for different varieties of beer. A general rule in England for the stronger kinds of ale and porter is to allow 1 lb. of hops for every bushel of malt, but for common beer not more than $\frac{1}{2}$ this quantity of hops is often allowed. In consequence of the boiling causing the loss of a portion of the aromatic constituents of the hops, different expedients have been resorted to for collecting and condensing these, as they escape with the steam, or for substituting for the hops an extract prepared from them. This portion of the process is probably still susceptible of great improvement.—The next process is straining of the worts. This is done by passing them through a cistern called a hop-back, which has a metallic bottom full of small holes.—The next process is the cooling. This must be accomplished as rapidly as possible, to prevent acetification. Various expedients have been adopted for hastening the cooling. The old method is to expose the wort in broad shallow cisterns, over which currents of air are made to play. These are usually placed under the roof of the brewery, the rooms being ventilated by Venetian blinds, which form the sides of the apartments. Another method is to pass cold water through pipes which are laid in the divisions of the cisterns which hold the wort. The liquor, now called gyle, is brought to the temperature of 56° to 64°, and is then passed into the fermenting tubs, or gyle-tuns, as they are termed. These are huge wooden vats, strongly hooped and close, with the exception of a hole through which the process may be inspected. Yeast is now added, sometimes previously mixed with a quantity of the wort in which fermentation has already commenced. One gallon of yeast is usually sufficient to set 100 gallons of wort into fermentation. In cold weather more is required than in warm. No portion of the work requires more care than the introduction of the proper quality and quantity of yeast, and the management of the process to which it gives rise. The temperature is liable to sudden increase, and the fermentation to go on at too rapid a rate, or to proceed too sluggishly, leading to a putrefactive decomposition. By the color of the froth or

barm the state of the operation is indicated, and this is regulated by its removal at the proper time and in proper quantity, and by suitable control of the temperature. The fermenting is continued in England from 24 to 36 hours, and in Scotland, at a slower rate, from 6 to 12 days, which renders the further fermentation in casks unnecessary. The head of froth is finally beaten down and mixed with the wort before all the sugar is converted into alcohol; and in order to anticipate the acetous fermentation, which would soon ensue, as also to retain the alcohol, the aroma of the hop, and the carbonic acid in solution, the beer is drawn off into large casks or "rounds," in which it is further fermented and cleansed. The frothy matters, consisting of the particles of yeast puffed out by the carbonic acid, which is liberated and mixed with them, slowly flow over by the bung hole, and the casks are kept full by adding fresh supplies of ale. Isinglass, dissolved in sour beer, is sometimes added to hasten this cleansing process. It fines the liquor, by forming at the surface a scum or web, which, as it slowly sinks to the bottom, carries with it the different floating impurities. In this final "attenuation" all muddiness is removed from the liquor, which becomes clear and transparent, and, if skilfully managed, with some saccharine matter left not converted into alcohol, and yet not so much of this as to give to the liquor a mawkish sweet taste. From the cleansing casks the liquor is transferred to the great store vats, or to the barrels in which it goes to the consumer.—Pale Indian or Burton ale undergoes a long-continued and slow fermentation, particular care being taken that the temperature does not exceed 65°. The best malt and hops are selected, and more than twice as much of the latter is used as in the manufacture of the other kinds of beer. It thus has less saccharine and more bitter matter than the other beer, and is better adapted for use in hot climates. Scotch ale is more heady and less wholesome than the other ales. Mr. Roberts found, in examining 71 samples, an average of 14.59 per cent. of proof spirit. Until a taste had been developed for mild fresh ales, it was the practice to keep an enormous stock on hand from 18 months to 2 years in the store vats of the great English breweries. One vat at Whitehead's was said to contain no less than 20,000 barrels of the capacity of 86 gallons each. By the bursting of such a vat at Meux's brewery some years since, several houses with their inhabitants were swept into the river. Bavarian beer has been highly recommended by Liebig as less liable to become sour than the French and English beers. Dr. Ure, after a personal examination of them while travelling in Germany, does not confirm the views expressed by Liebig.

BREWSTER, SIR DAVID, a British savant, born at Jedburgh, Scotland, Dec. 11, 1781. His attention was first directed to optics in 1808, and he independently made several discoveries in regard to the polarization of light, which were

also made by Malus and Arago. From 1818 his contributions to the London and Edinburgh philosophical transactions contain the record of many of the most brilliant of modern discoveries in optics, especially with regard to the polarization of light. His experiments in the absorption of light, in passing through various media, have also led to singular results. He has, moreover, contributed to other sciences, particularly to thermotics and meteorology. His popular fame arises chiefly from his invention of the kaleidoscope, his life of Sir Isaac Newton, and an elementary treatise on optics. He edited the Edinburgh "Journal of Science," commenced in 1824, and the "Edinburgh Encyclopædia," completed in 1830, after 23 years' labor.

BREWSTER, WILLIAM, elder of the Plymouth pilgrims, born at Scrooby, England, in 1560, died at Plymouth, Mass., April 16, 1644. He was educated at Cambridge, and entered the service of William Davison, ambassador in Holland, but presently retired to the north of England, where his attention was chiefly occupied by the interests of religion. He was one of the company who with Mr. Bradford attempted to find an escape to Holland, and were thrown into prison at Boston. Having obtained his liberty, he first assisted the poor of the society in their embarkation, and then followed them to Holland. Here he opened a school at Leyden, for instruction in English, and also set up a printing press. He was chosen a ruling elder in the church at Leyden, and accompanied them to New England in 1620, where until 1629 the principal care of the church devolved upon him, though, as he was not a regular minister, he could never be persuaded to administer the sacraments.

BREYDENBACH, BERNHARD VON, a priest of Mentz, who visited Palestine in the middle of the 15th century. On his return to Germany he wrote an account of his travels in Latin, which was published in 1486. This work was accompanied by engravings on wood of the scenery, costumes, and animals of the Holy Land, and contained several oriental alphabets, which are said to have been the first ever printed.

BRIAN BORU, or **BOBONCHU**, meaning "of the tributes," the most celebrated of native Irish kings, born about 927, slain at Clontarf, on Good Friday, 1014. He was the son of Kennedy, king of Munster, and succeeded his father in 985. His first exploits were against the Danes of Limerick and Waterford. He confined them within the limits of those cities, and made them pay tribute in pipes of wine. In 1002 he made himself *ard-riagh*, or supreme monarch of Ireland, putting aside the legitimate families, the O'Neills and O'Melaghlin. He now levied a heavy tax upon the subordinate kings; from Connaught he demanded 800 hogs; from Tyreconnell (the present county of Donegal), 500 mantles and 500 cows; from Tyrone, 60 loads of iron; from the clan Rory of Ulster, 150

cows and 150 hogs; from Oriel, 160 cows; from Leinster, 300 cows, 800 hogs, and 800 loads of iron; from Ossory, 60 cows, 60 hogs, and 60 loads of iron; from the Danes of Dublin, 150 hogsheds of wine; from the Danes of Limerick and Waterford, 865 hogsheds of red wine. His palace was at Kincora, in the county of Clare, near the present town of Killaloe. He caused a road to be constructed round the coast of the whole kingdom. Vallancy states that in his day the country people called it Brian Boru's road. In the latter part of his reign Maelmora, the king of Leinster, revolted and called in the Danes to his assistance. Brian Boru repulsed the allied Danes and Leinstermen at Clontarf, and died on the battlefield. His son Morrogh also fell in the same fight. The Danes never regained any independent position in Ireland after this defeat. An ordinance of his prescribed that every one should adopt as a surname the name of his father. Thenceforth surnames became permanent in Irish families. He is the founder of the O'Brien family, now represented by Lord Inchiquin, and Mr. William Smith O'Brien.

BRIANÇON, the highest town in France, being 4,283 feet above the sea-level, and formerly capital of the district of Briançonnais, but now included in the department of Hautes-Alpes. It is at the junction of the 2 sources of the river Durance and at the foot of Mont Genève, about 100 miles from the Mediterranean, on the eastern frontier of France. It commands the principal pass to the Italian and Swiss frontiers; is a depot of military stores for the French Alps, and is surrounded with a triple line of ramparts. Seven forts whose cross-fires protect all the approaches to the town are connected with each other by subterranean passages cut in the solid rock. The eminence which rises in the centre of the town is crowned with a fort. The town is poor in agricultural and mechanical resources. The most famous productions of Briançon are chalk and manna (the latter from larch-trees, also called Venice turpentine). Its only importance is as a military station. Pop. in 1856, 3,544.

BRIANSK, capital of the Russian circle of the same name, in the government of Orel, on the river Deana, with 18 churches and chapels, a convent, an arsenal, a cannon foundry, and various manufactories. Pop. of the circle, 93,300; of the town, 8,500.

BRIANZA, a mountainous district in the Austrian circle of Como, in Lombardy, including the hilly country between the Adda and the Lambro, from the neighborhood of Arosio to Como, the foot of the mountain lying between the lakes of Como and Lecco. Brianza is celebrated for producing the finest silk in Lombardy, for the beauty of its scenery, the intelligence of its inhabitants, and for its salubrious climate. It is justly called the garden of Lombardy.

BRIARE, a French town in the arrondissement of Gien, department of Loiret, on the right bank of the Loire, at the junction of the

Briare canal with that river. This canal is the oldest in France, begun in 1606, under Henry IV., and, with that of Loigny, connects the Loire with the Seine, at Montargis. The 2 canals have 41 locks. Briare is a place of some trade in wine, wood, and charcoal. Pop. 8,110.

BRIAREUS, or *Ææxon*, a renowned giant of Greek mythology, the son of Cœlus and Terra, is said to have had 100 arms and 50 heads. When the inferior deities conspired against Jupiter and endeavored to dethrone him, Briareus rendered effective aid to the father of the gods; but when Briareus himself presumed to rebel he was put in durance under *Ætna*, which belched forth fire and flame as often as the monster struggled in his subterranean dungeon.

BRIBERY, in English law, is the giving or receiving a reward for the violation of official duty. It includes every act of a public officer, judicial or ministerial, civil, ecclesiastical, or military, corruptly done for a mercenary consideration, and is a misdemeanor at common law. It is honorable to the judiciary of England and the United States that the bribery of judges is very rare, which shows a moral tone of the public mind strikingly in contrast with what is exhibited in some periods of English history. The sole apology offered for Lord Chancellor Bacon's receiving presents from suitors was that the practice was common. In the reigns of Charles II. and James II. there was a shameful venality of judges; but, since the act settling the succession of the house of Hanover (1701), which included a provision that the commission of judges should no longer be at the pleasure of the crown, but *quandiu se bene gesserint*, subject to removal only upon the address of both houses of parliament, the integrity of English judges, at least of the higher rank, has been uniform. One case of corruption by Chancellor Macclesfield, who made sale of the offices in his patronage, and connived at the use of moneys on deposit in his court for private purposes, for which he was impeached and removed from office in 1723, is the only exception to the general character of the judges; but the office of chancellor was and still is at the pleasure of the king, its incumbent being a member of the cabinet. In the reign of Edward III. Chief Justice Thorpe was hanged for taking bribes. By statute 11 Henry IV., all judges and officers of the king convicted of bribery are subject to forfeiture of treble the amount of the bribe, are punishable at the king's will, and to be discharged from his service forever. Bribery at elections has been guarded against by several statutes, the principal provisions of which are that any candidate for election to parliament who shall give money or entertainment to his electors, or promise so to do, is incapacitated to serve for that term in parliament, and the giving or receiving any reward for a vote, whether money or any gift, is made liable to a penalty of £500, and the person so giving or receiving is forever disabled from voting or holding any office. This

last provision applies to all elective offices.—In this country similar statutory provisions have been enacted. In the state of New York bribery of any member of the legislature, or any officer of the state, or any judicial officer, is punishable by imprisonment in the state prison for 10 years, and a fine of \$5,000; and it is defined to be the offering of money or any gift with intent to influence the vote, opinion, or judgment of such officer in any matter brought before him in his official capacity. Bribery of a juror, referee, or arbitrator, is in like manner punishable by the laws of New York, by imprisonment in the state prison 5 years and a fine of \$1,000. Bribery of an elector is punished by imprisonment one year and a fine of \$500. As before remarked, judicial purity has been maintained in this country, but all penalties against improper influence at elections, and upon members of legislative bodies, have been ineffectual both in England and this country.

BRIBIESOA, or *BRIVIESOA*, a town of Spain, in the province of Burgos, on the river Oca, on the road from Burgos to Vittoria. At a meeting of the cortes held here in 1888, by King Juan I., the title of prince of Asturias was conferred in perpetuity on the heir-presumptive of the crown of Spain. Pop. in 1882, 2,064.

BRICK, a building material made of clay, moulded commonly in rectangular blocks, and baked in the sun or by fire. The most ancient records make mention of their use. The early descendants of Noah found on the plain in the land of Shinar the clay for their construction, and "said one to another, Go to, let us make brick, and burn them thoroughly; and they had brick for stone, and slime had they for mortar." (Gen. xi. 3.) The slime was probably the semi-fluid bitumen used at early periods in Egypt and Palestine as a cement; and no better building materials have ever since been used than those ancient bricks, and the natural mortar employed to bind them together. The walls of Babylon were built of burnt bricks laid in bitumen, as were the exterior walls of the still existing mounds, the largest of which is supposed to have been the tower of Babel. The interior of this mound is filled up with unburnt bricks set in clay, with layers of reeds between every 5 or 6 courses. In other parts of the work the bricks were laid in lime-mortar of exceeding toughness. From the frequent reference to the making of brick in the Old Testament, the manufacture appears to have been an important one with the Israelites and Egyptians. It was a principal task imposed by the latter upon their captives. The gathering of straw and stubble for mixing with the clay indicates that they were sun-dried, like those seen at this day in some of the pyramids of Egypt. Upon one of these, probably the brick pyramid of Howara, 10 leagues from Cairo, was formerly an inscription, cited by Herodotus, of which the following is a translation: "Do not undervalue me by comparing me with pyramids of stone. For I am better than they, as Jove exceeds the other deities. I am made of

bricks from clay, brought up from the bottom of the lake adhering to poles." The same material was used for other structures of high antiquity. The Greeks gave particular attention to the quality being perfectly adapted to the use to which they were to be applied; in some instances, as stated by Pliny, not allowing them to be used until after they had been seasoned 5 years, and then obtained the approval of a magistrate. The palaces of Croesus, king of Lydia, of Mausolus of Halicarnassus, and of Attalus of Tralles, some of the ancient temples of Athens, and the walls of that city looking toward Mount Hymettus, were built of this material. The Romans perfectly understood the art, as the bricks in the baths of Titus and Caracalla bear witness. The stone of the Colosseum has not proved so durable. In the ruins of their forts, walls, &c., in Great Britain, they are found of an excellent quality, of a deep red color, well burnt, and very hard. The brick made by their successors in England was not particularly noteworthy until about the middle of the 14th century. In the time of Henry VIII. and Queen Elizabeth so good an article was produced, that it was employed in the construction of many fine edifices. In modern times the manufacture is more remarkable for the immense scale upon which it is conducted, than for the good quality of the product—a fact attributed by the English writers to the practice so generally adopted in London of building houses upon lands leased for a certain period, at the expiration of which the property reverts to the owner of the ground. The Dutch appear to have succeeded better than the English to the skill of the Romans. Their bricks have been famous from an early period for their soundness and durability. So substantial were they, that they served well for the floors of houses, and even for the pavement of the streets. Specimens of Holland brick, brought over by the early settlers, are to be met with in some of the old Dutch houses of New York. Among the Asiatic nations the manufacture has continued at a high degree of excellence from the remotest periods. In the hilly country of Nepal to the north of Bengal, bricks are now made of such remarkably compact texture, and so elegantly ornamented upon their surface, as to be peculiarly fitted for architectural decorations. The Chinese give to the face of their brick the texture of porcelain. The ancient Peruvians excelled in the manufacture of brick, as in many other of the useful arts. Their edifices, whether of porphyry, granite, or brick, built after one type, so that one would say, as Humboldt remarks, that a single architect had constructed them all, excited the admiration of the early Spanish adventurers for the excellence of the materials, and the solidity with which they were put together. Ulloa, after carefully examining the large bricks, was confident there must have been some secret in their composition, which was lost in his time, so superior were they to those made by any process then known.

They are described by Prescott as large blocks or squares, made of a tenacious earth mixed up with reeds or tough grass.—The plastic nature of clay and its property of hardening by heat into a substance like stone are qualities so obviously adapting it for building purposes, particularly where good stone is not to be obtained, that no people requiring permanent dwellings have failed to perceive them, and avail themselves of its use. But clay is not an article of uniform composition, and all that is met with is by no means adapted to this manufacture without some admixture of other substances. The purer aluminous earths consist of about 2 parts of silica to 1 of alumina, together with a larger or smaller proportion of water. They are remarkable for their plasticity and mixing freely with any quantity of water. But such materials, if moulded and baked, would shrink greatly and bend and warp; cracks too would be produced from the outside hardening before the moisture of the interior could escape through the viscid mass. Such rich or fat clays require to be tempered with sand, or cinders and ashes, which render their texture more open, so that they retain their form; but they may without this tempering serve for baking into thin sheets as tiles. The quantity of sand or other substance required for any clay can only be determined by actual experiment. Any strange clay should always be tested by making some bricks of it before its quality is pronounced upon. Some clays contain a proper proportion of sand naturally mixed with them. Others contain too much, and the bricks from these will fall to pieces. Admixture of fatter clays is the only method of making such useful; unless an expensive process be adopted of suspending the earth in water, and drawing off and collecting that which is held longest in suspension. Beside the sandy clays or loam, calcareous clays or marl are sometimes used for the manufacture of brick; but if much lime be present, the compound may be too fusible to answer the purpose of making good brick. Oxide of iron is rarely absent. In the process of burning it is converted into the peroxide, and imparts to the whole brick its red color, more or less deep according to the degree of oxidation. The first of the following analyses is of a clay highly charged with oxide of iron, given in Knapp's "Chemical Technology." It is largely used in the neighborhood of Glasgow, Scotland, for making brick. The quantity of water is less than is commonly given in the analyses of clays. The second is of a clay suitable for potters' use or the manufacture of brick:

	(1)	(2)
Silica.....	49.44	48.5
Alumina.....	34.36	33.2
Peroxide of iron.....	7.74	1.0
Lime.....	1.43	2.5
Water.....	1.94	13.0
Magnesia.....	5.14	Loss, 0.8
	100.00	100.00

The more free the clay is from other ingredi-

ents than silica and alumina, the better adapted it is for making bricks that withstand high temperatures. Clay taken freshly from its bed, even if of suitable composition, is not in a condition to be at once moulded into brick. It must first be exposed to the weather until its particles are disintegrated, and it can be kneaded into a mass of uniform consistency. This is best effected by the action of frost, the water diffused through the substance expanding by freezing and breaking it in every direction. The longer the exposure is continued the more effectually is the clay reduced. This is followed by covering the clay with water and leaving it for a short time in a pit or tank. The kneading was formerly conducted by treading of horses, oxen, or men; and the work was no doubt more efficiently done by the naked feet of men than by the machinery afterward introduced for this purpose; for the lumps, stones, sticks, &c., mixed with the clay were thus readily detected and removed. The pug-mill is the first form of machinery introduced for grinding the clay. It is a conical or cylindrical tub, standing on end, with a shaft passing vertically through it, armed with blades, which cut and knead the clay delivered in the top, forcing it down by their oblique position to the line of the shaft, as this is carried round by a horse attached to a horizontal arm. The clay thus ground and kneaded continually passes through an opening in the bottom of the mill, and is then cut into convenient pieces and stacked away for use. It must then be handled again for moulding it, and the practice was formerly to dash with force a quantity into the mould, which was a box of wood or of brass without top or bottom, and then strike off what was superfluous. The mould is always sanded to prevent the clay adhering to it. A box containing a row of 5 or 7 moulds open at bottom was afterward contrived to run in under the lower part of the pug-mill and receive the clay, the further exit of which was at the same time arrested until another box of moulds replaced the one just removed. The work was thus rendered more expeditious with less expenditure of labor. In whatever way the kneading is conducted, especial care is taken to separate from the clay roots, sticks, and pebbles, the presence of which in the bricks would disfigure and weaken them. Even if the stones were buried in the interior of the bricks a cavity would be left around them, for the reason that the stones first expand while the clay contracts by heating, and afterward contract by cooling in a much greater degree than the clay. In tempering the clay, it was long since found highly advantageous at the great brick yards near London to introduce a portion of coal ashes, which always contain more or less fine coal. The use of fine anthracite was introduced for the same purpose at the kilns on the Hudson river in 1838, and has been found so serviceable that it has been ever since continued. The quantity employed is about 75 bushels to

100,000 bricks. It is thoroughly intermixed in the kneading, and has the effect of saving a portion of the fuel, while it diminishes the time of burning; the quality of the bricks, however, is not so good, as of those made in the old way. For drying the bricks previously to baking, the first requisite is a smooth level yard fully exposed to the rays of the sun, or, if covered by a roof, open to a free circulation of air all around. To this the moulds containing the bricks are brought, and being placed upon the ground, are cautiously lifted off, leaving the bricks behind. They are arranged in rows, and in case of rain, if not under a roof, must be covered with boards, as they are in danger of being washed away. The drying should be thorough, or the bricks will be likely to crack in baking. After depositing the bricks on the drying floor, the moulds are taken back, are dipped in water, and then into sand, and are ready to be refilled. The bricks are left upon the drying ground a longer or shorter time according to the weather, and when well dried are removed to be baked. This is effected in England sometimes in permanent kilns, which hold as many as 20,000 bricks, and which are filled and emptied like those for baking earthen ware, the burning being completed in about 48 hours. The method in common use in this country of piling the green bricks upon one another to make their own kiln is also adopted there; but the arrangement is called a clamp instead of a kiln. By this method half a million bricks, or even a million, are burned in one operation. A central double wall is built lengthwise along the kiln, its lower portion of bricks already baked, and on each side are parallel longitudinal fire-flues built of unburnt brick, laid very open; over them the great body of brick is piled after an exact system, vertical flues ascending to the top, and the whole work being laid in an open manner for the free circulation of the gases. The fires are made in one end of the flues, and the heat is increased by the combustion of the small coal which was scattered throughout the heap as it was built up. The top and sides of these clamps are usually built of bricks that have been already once baked. The underbaked bricks of previous firings may thus be conveniently finished. Over the whole a covering of loam is sometimes laid to prevent the fire from burning too rapidly; and screens of wood or other material are used to protect portions against the wind. The time required to burn a kiln varies with its extent and the manner in which it is fired. The English accounts state: "So very slow is the progress that bricks in the neighborhood of London take about 8 months in the burning." The time formerly required on the Hudson river for burning the great clamps of from 800,000 to 1,000,000 bricks was about 9 weeks, and the consumption of oak wood was about 40 cords to 100,000 bricks. The quantity usually regarded as sufficient is, however, only 38½ cords. After the introduction of

anthracite dust in the clay, the time of burning was reduced, according to Prof. Mather (Geolog. Report, p. 144), to 3 or 4 days, and the consumption of fuel to 16 cords to 100,000 bricks. The mere expenses of burning this number of bricks are rated in the report at \$80 for 16 cords of wood, \$3 for 75 bushels of anthracite dust, and \$6 for 4 days' attendance; total, \$89. The preparation of the clay, moulding, drying, building up of the kiln, waste, &c., make all together a larger amount than the burning. As the bricks in a clamp are exposed to great differences of temperature, they are found of various qualities, when the process of burning is completed. Those near the flues are partially vitrified and melted together. Many are slightly fused on the surface, and baked to a stony hardness. These are called clinker-bricks, and are used in situations where they will be exposed to the weather, or to rough wear. The soft bricks are selected to be laid for work in sheltered situations. The very slackest baked are returned to the next kiln.—The immense consumption of bricks in cities has made it an important object to reduce the labor employed in their manufacture as much as possible, and consequently a great deal of ingenuity has been expended in devising machinery for grinding and moulding the clay. The number of patents issued in Great Britain was recently stated to be 230. The great number of these machines renders it impossible to more than mention the general principles upon which they are constructed. One has already been referred to, in which the moulds are filled in the lower part of the mill. Others, on the same plan, are furnished with a contrivance for pushing out the brick from the mould, and the mould is then instantly returned to be refilled. Some on this plan have only single moulds; others a frame containing several, which revolves upon a plate or the bottom of a cylinder, and into this the clay is forced by a steam piston. Another class is contrived to force along a continuous rectangular block of clay of the size of the brick, which is cut by a wire, as it passes out of the machine, into the right lengths. Other machines have been made to stamp out the brick from a cake of clay of the proper thickness, as cakes are stamped from a sheet of dough. In several machines, as the clay is delivered into the moulds, it is subjected to the pressure of a heavy roller, and as the moulds pass from under this, the clay is scraped off smoothly, and the face is handsomely finished by the action of gauge-plates and knives. Machines are also in operation which pulverize the dry clay, and press this into moulds ready for burning. Sufficient moisture is always present to insure cohesion of the clay. A patent for this was granted in Dec. 1847, to Mr. Nathan Sawyer, of Baltimore. Another on the same principle was invented and patented by Woodworth and Mowen, of Boston, which worked by a steam engine of 20 horse power, pulverized and screened the clay, and moulded and pressed 2,500 bricks per hour. The pressure is applied

by a hammer or ram sometimes of 4,000 lbs. weight. The whole machine, as originally made, weighed with the pulverizer and screen over 30 tons. Bricks are thus made on Staten Island, and extensively used in New York. They present a smooth appearance, but the edges are not firm and sharp, and thus do not weather as well as the beautiful brick brought from Philadelphia and Baltimore. These have the advantage, however, of a better material, as well as a more perfect method of manufacture. In order to diminish the weight of bricks, they have been made partially hollow on one side—an effect produced by the mould having a rectangular block projecting from its bottom. From some experiments made not long since in Belfast, Ireland, with a powerful hydraulic press, to ascertain the comparative strength of these bricks it would appear that they sustain a much heavier pressure than the solid bricks of ordinary good quality. The experiments were tried upon piers of each kind, one 9 inches and one 18 inches square, laid in Roman cement. The mean results were, that the solid brick was crushed with a pressure of 68½ tons to the square foot; the hollow brick with 184½ tons. Bricks have also been hollowed out on one side, with a view of forming, when laid, ventilating flues in the wall, the cavities in adjacent bricks being brought opposite to each other.—The red color of brick, as before stated, is owing to the peroxidation of the iron contained in the clay. If the iron is deficient or only partially oxidized through insufficient heat, the bricks are of a pale color. The clay in the vicinity of Milwaukee, Wisconsin, is remarkably free from iron, and the bricks made of it are of an agreeable straw color, with no tinge of redness. These are so highly valued, that they are transported even to New York city, where several fine structures have been built of them; Trinity building, just above Trinity church, is one of these. Other colors may be imparted to brick, provided that of the oxide of iron does not overpower all other coloring matters introduced. In England, it is stated such bricks have been manufactured, which present a beautiful appearance. American bricks vary in size in the different states, running from 7½ to 8½ inches in length, 4 to 4½ in width, and from 2½ to 2¾ in thickness. In New York 5 courses of front brick are usually allowed to the foot in height. In New England the brick would make this without the mortar. In New York, 21 common bricks are reckoned to the cubic foot of wall laid. The weight is commonly reckoned at 4 lbs. to the brick; but this varies of course with the size, with the amount of pressure to which the clay has been subjected, and the heat applied in baking. Soft brick may contain several ounces more of water than a clinker-brick of the same quantity of original material. English bricks are commonly 9 inches long, 4½ wide, and 2½ thick.—UNBURNED BRICK. These are highly recommended by Mr. Ellsworth, late commissioner of patents, for the construction of cottages. He built several of

these, and found the material cheap and durable. The clay is well trodden with cattle, and 2 bundles of straw, cut in 6 inch lengths, are added to enough for every 100 bricks. Moulds are prepared of plank, with a bottom, but this must not be air-tight. They may be a foot long, 6 inches wide, and 4 inches deep. The moulding is done by hand, and the surplus clay is struck off with a strip of iron. As the bricks are discharged from the moulds they are set on edge to dry, and the second day are turned over. In 8 days, if the weather be dry, they are ready to be piled up under cover, where they should lie two weeks or more before using. In building walls, the foundation should be of other material, and a layer of slate or burnt brick, laid in cement, should protect the unburnt brick from the dampness arising from the ground. Walls of cottages are built the length of one brick thick, with courses of alternate headers and stretchers. This is the mode of laying brick known as the old English bond. It is necessary to construct the roof projecting 2 feet or more over the walls, and these may be further protected by plastering, and a second coat pebble-dashed. (See *ADOBE HOUSES*.) In France, as near Lyons, not cottages merely, but some of the villas of such pretensions that their inner walls are painted in fresco, are built in this manner.—**FLOATING BRICKS.** A very light silicious earth is occasionally met with, of which bricks have been made that float upon the water. Clay may be added to the silica, if required, to bind the material together. Such bricks were made in ancient times, and were described by Posidonius and Strabo, and particularly commended by Vitruvius, Pollio, and Pliny. In 1791, they were again brought into notice by Giovanni Fabroni in Tuscany. The bricks are remarkable not only for their extreme lightness, but also for their infusibility, and for being very poor conductors of heat. They may be held by one end while the other is red hot. Similar earth, found by Ehrenberg to consist of microscopic silicious shells, has been discovered in France and at Berlin, and it is probably the same whitish substance, that is often found under our peat bogs. (See *CLAY*.) Bricks made of it are about one-fourth the weight of ordinary bricks. At Berlin, made with $\frac{1}{6}$ mixture of common clay, they were used for building the museum.—**FIRE-BRICKS.** When bricks are required to withstand high temperatures, they are made of the most infusible clays, such as contain from 68 to 80 per cent. of silica, with from 18 to 25 per cent. of alumina, and the remainder water. Oxide of iron may be present, but the light color of fire-brick shows that this is in very small quantity. Lime would render the mixture fusible, and this is necessarily always absent. Such clays are of common occurrence in the bituminous coal measures, where they are found making the floor or underlying stratum of the coal-beds. The material is indurated, so that it is broken up like a soft stone. When used, it is ground in a mill, and mixed with fragments of

previously baked fire-brick, or of some refractory stone, or with a coarse, clean silicious sand and gravel. The materials are made into a paste with water, moulded in hand-moulds, and baked in permanent kilns at a very high temperature. Good clay for fire-brick is also found associated with other clays of more recent formations. The potters' clay formation found at South Amboy, New Jersey, contains beds of excellent quality, together with others of very pure sand, suitable for mixing with the clay. The manufacture of fire-brick has long been carried on at this locality. At Athens, opposite Hudson, on the banks of the Hudson river, is another locality where good fire-bricks have long been made. At Bennington, Vermont, an excellent clay is found of the character of kaolin, from which fire-bricks of very refractory quality are made by mixing with it stones that withstand heat, crushed sufficiently fine. These bricks are extensively employed at the blast furnaces in that part of the country. It is for the lining of such furnaces that fire-bricks are principally in demand, and for this use they are prepared of a variety of sizes and shapes, adapted to fit the curves in the lining of the stacks, and the arches of the flues. The standard size to which all the larger bricks are referred in reckoning their number is that of the common rectangular fire-brick, which measures 9 inches in length, $4\frac{1}{2}$ in breadth, and $2\frac{1}{4}$ in width; of these the weight is 7 lbs. These bricks, specially adapted to each pattern, are also employed as a lining for the anthracite coal stoves so extensively in use in the United States.—**BRICKLAYING.** The form and proportions of the faces of brick to each other are such, that they may be laid in various methods, according as the object is to produce the greatest strength of wall, or the most pleasing effects. Ornamental work, as cornices, beads, &c., is produced by causing courses of brick to project beyond the plane of the rest. By the introduction of mortar, bricks, notwithstanding their rectangular shape, are curved round to form arches of any desired curve; they are easily broken also into any required shape by the trowel, and thus are made to receive, if desired, the approximate form of arched brick. Fire-bricks, as mentioned above, are moulded in shapes for laying curves, as also common bricks for the lining of wells, &c. In laying walls, the first principle to be observed is causing the bricks of successive courses to overlap each other, so that the joint between 2 is overlaid by the middle of a brick. The courses are thus bound together, and the greatest resistance is offered to any force tending to separate the bricks. As the width of two bricks laid side by side equals the length of one, the position may be reversed with each course, thus securing additional strength. What is called the old English bond method of laying a wall, which is the strongest mode, is to arrange the bricks in alternate courses of stretchers and headers, the former being bricks laid longitudinally with the wall, and the other transversely, presenting

their ends or heads only to the face of the wall. Next the corner, a quarter brick on the row of headers must be introduced, so that the stretchers overlying may lap to the middle of the second headers. The headers are also called binders, from their effect in binding the bricks of the other courses together. Owing to their presenting a greater number of joints in the face of the wall, their effect is not so pleasing as is that of the stretchers, and it is too often the case that the front walls of costly edifices are seen too largely built of stretchers, merely for the sake of their better effect. In New York city it is required by the fire laws that 1 course in 5 shall be headers. This is effected, while stretchers only are seen on the face, by laying every 5th course in what is called herring-bone, breaking off the back corners of the stretchers to let the corners of the brick behind come nearly to the outside line of the wall. In the Flemish bond the bricks are laid alike in each course, a header and stretcher alternating along the course. The effect is thought to be more pleasing than the English bond, but at the sacrifice of some strength. Walls vary in thickness by the difference of the width of a brick. They are 8 inches or the length of a brick thick, 12 inches or a brick and a half, 16 inches or 2 bricks, and so on. Laid in English bond, all the bricks on one course must be placed in the same direction, even when the wall turns at right angles, and in turning the corner no 2 bricks must be arranged side by side, but the end of one must lap to the middle of the next contiguous to it, excepting where the quarter brick is introduced at the corners to prevent a continued upright joint in the face work. The work is strengthened by the occasional introduction of pieces of hoop-iron, which bind it together, particularly if the iron is somewhat rusty, which causes the mortar to adhere better. The bricks, in dry weather especially, should be wet before being laid, for the same object of uniting more closely with the mortar. As the wall is built up, no part should, at any time, reach more than 4 or 5 feet above the rest; for unless all upon the same level settles together, cracks will be produced where the newer work is joined upon the older.—Hollow walls, long a favorite mode of construction in various parts of Europe, are highly recommended by the late A. J. Downing, as by far the best mode of building brick houses, and various plans of laying the brick for 8-inch, 12-inch, and 16-inch walls, are given in his "Architecture of Country Houses." The method has been adopted in nearly all the best villas at New Haven. Its advantages over solid walls of the same thickness, are—a saving in bricks and mortar; also in the lathing and studding for furring off, the air space for preventing dampness being in the wall itself; and, lastly, greater security against the spreading of fire, as no combustible material is introduced in the walls. The 8-inch wall introduced by Mr. Dearn, an English builder, is worthy of particular notice for its great economy. He describes it as requiring only one-third of

the bricks and one-half of the mortar of a common solid wall of the same thickness. It is sufficiently strong for small cottages, and, being hollow, is warmer in winter and cooler in summer than a solid wall. Two rows of stretchers are first laid on edge the whole length of the wall, so that they are covered by the next course, which is one of headers. Upon this the stretchers are laid again in 2 parallel rows, and covered by another layer of headers. The mortar between the headers at their ends causes an open space between them in the middle, and thus the air spaces of the courses of stretchers are all connected. As the headers go entirely through, they serve to convey dampness from the outside, and consequently a wall of this thickness should have a protecting coat of stucco or cement upon the outside.

BRIDAINÉ, JACQUES, a French preacher, born March 21, 1701, died Dec. 22, 1767. He surpassed the greatest orators in the power of moving an audience by his eloquence, and going forth in the cities of France with his little bell, would rivet the attention of multitudes. Many extraordinary conversions were the fruits of his efforts. He had just accomplished his 256th mission when he died.

BRIDE AND BRIDEGROOM are derived from 2 Anglo-Saxon words, *bridam* and *gymas*, and mean the cherished and cherisher, bride being applied to the newly married wife, and bridegroom to the newly married husband. As the enjoyment of these titles, and of the honors which belong to them, is necessarily brief, it has been usual, from the earliest period of antiquity, to make the most of a bride and a bridegroom during their ephemeral existence. They exist as such, indeed, only for one day, that of the wedding; becoming, on the next, simply husband and wife; and in every age, and among every people, the wedding-day has been devoted to joyous and solemn ceremonies. It was celebrated among the Athenians by offerings made in the morning to particular divinities, to Zeus and Hera, and especially to Artemis, who was thought to look with disfavor upon marriages. The bride consecrated locks of her hair to the Fates, and both the bride and bridegroom bathed in water brought from some favorite fountain. At night-fall she was conducted to the bridegroom's house, in a chariot drawn by a pair of mules, and furnished with a kind of couch, on which she sat between her husband and one of his nearest friends. She was veiled, and all were in their best attire, with chaplets about their heads. The bridal procession moved on, greeted and accompanied by friends bearing nuptial torches and singing hymenean songs to the accompaniment of Lydian lutes. As the bride alighted, the axle of the carriage was in some parts of Greece burned, to signify that she was from that time to remain at home; and as she entered through the door, hung with festoons of ivy and bay, sweetmeats were showered upon her, as emblems of plenty. Then followed the marriage feast, to which, contrary

to the usual Greek practice, women as well as men were invited; and, at its close, the bride was conducted by the bridegroom to her apartment, where a law of Solon required that they should eat a quince together. Before the door the *epithalamium*, or bridal song, was sung, as thus represented by Theocritus:

Twelve Spartan virgins, the Laconian bloom,
Choir'd before fair Helen's bridal room;
To the same tune with cadence true they beat
The rapid round of many twinkling feet,
One measure tripped, one song together sung,
Their hymenean all the palace rung.

On the day after the marriage, presents were made to the newly married couple by their friends.—A relic of barbarism in the Spartan customs was the pretended seizure of the bride by the bridegroom, after the preliminaries of marriage had been arranged with her parents or guardians.—Among the Romans the same custom prevailed, in memory of the rape of the Sabines. The wedding day was fixed, at least in early times, by consulting the auspices, and the bride was attired in bright yellow shoes, and a veil of the same color, and in a long white robe, adorned with a purple fringe and with ribbons, and bound about the waist by a girdle or zone, to be unloosed by the bridegroom. The Roman marriage was usually, though not always, unattended by any religious ceremony. The bride was conducted to the house of the bridegroom by a procession resembling that in the Greek ceremony, and bore in her own hands the emblems of diligence, a distaff and a spindle with wool. She wound wool around the door-posts of her new residence, which were also adorned with garlands and flowers, and was lifted across the threshold by 2 married men, since for her to have touched it with her foot would have been an evil omen. The bridegroom received her within with fire and water, a symbol, perhaps, of purification. She received the keys of the house while sitting upon a sheepskin, and the ceremonies of the day were concluded by a repast given to friends and relatives. The bridal apartment, to which she was conducted by matrons who had not had more than one husband, was magnificently decked with flowers, and minstrels and friends sang without during the night.—Modern fashion has cunningly contrived to lengthen out the privileges of bride and bridegroom beyond the brief day which alone belongs to them by right and title. In olden time, when the wedding day and its attendant gayeties were over, all bridal honors ceased. It is true that, even then, overkind friends would extend the privileges of bride and bridegroom until they encroached rather inconveniently upon those of husband and wife. It was customary to lengthen out the occasion by various ceremonies, often "more honored in the breach than the observance." The bride was undressed and put to bed by the bridesmaids, and the bridegroom submitted to the same operation, at the hands of the groomsmen. Then the posset, a kind of caudle, made up of "milk, wine, yolks

of eggs, sugar, cinnamon, and nutmeg," had to be served. The natural vexation at these tedious ceremonies is thus humorously expressed by Sir John Suckling in his charming ballad:

But just as heav'n's would have to cross it,
In came the bridesmaids with the posset;
The bridegroom eat in spite;
For had he left the women to't
It would have cost two hours to do't,
Which were too much that night.

Then there was sometimes another dilatory proceeding in the sewing of the bride in a sheet. Herrick, in his "Hesperides," says, alluding to this custom, prevalent in his day:

But since it must be done, dispatch and sowe
Up in a sheet your bride.

These formalities may have exhausted a good portion of the night, but they never extended into the next day, when the newly married pair lost their privileges as bride and bridegroom, and were left to console themselves ever after with the sober duties of domestic life.—In modern times the bride and bridegroom, immediately after the marriage ceremony and reception, go on what is called the bridal tour. They thus, by rapid transitions from place to place, are able to make, like a pair of strolling players, at each stage of their journey, a first appearance, in the characters of bride and bridegroom. The privileges of this happy state are often thus prolonged by the cunning of modern fashion to a fortnight or more, the usual duration of the bridal tour, and which prolongation of bridal existence is technically known as the honeymoon.—The ordinary accessories of the weddings of our days may mostly be traced to ancient times. The marriage ring probably encircled the finger of the wife of the first Pharaoh, and it was certainly used in the Roman ceremonies, under the emperors. Its heathen origin nearly led to its abolition by the Puritans of Cromwell's time. Hudibras says:

Others were for abolishing
That tool of matrimony, a ring,
With which th' unanctify'd bridegroom
Is marry'd only to a thumb.

The wedding ring is always put and worn on the fourth finger of the left hand, because it was supposed, in ancient times, that an artery ran from this part directly to the heart, and therefore that it was the place whence this pledge of love might send its mysterious message most readily to the supposed centre of the affections. The bride cake is no less sanctified by antiquity than the ring. It is a symbol of plenty, and it is intended to express the hope that the newly married pair may be always supplied with an abundance of the good things of this life. In ancient days wheat was sprinkled upon the head of the bride with the same intent, but in latter times the wheat has taken the more presentable shape of a cake. Passing bits of the cake through the wedding ring 9 times, and putting them under the pillow to dream upon, was a practice in vogue long before our great-grandmothers lived and loved, and is not yet obsolete. Putting up the slices in white paper

boxes, is an innovation of the present age. Wine, too, was an invariable accompaniment of all marriages, long before the marriage feast at Cana. In our age, it is often dispensed with, although in times past it was customary to drink it in the church, the priest having first blessed the cup, however, to suit it to the holiness of the place. The Jews universally hold to the custom of wine-drinking on the occasion of a marriage. The bride and bridegroom having quaffed their share, the glass which contained it is broken, to remind them of mortality. This was done at the famous wedding in the family of the Rothschilds at London, in 1857.—The bridal kiss is of unknown antiquity. The old missals, which date long before the "common prayer book," enjoined it as an essential part of the marriage ceremony. Moreover, it was always done in church. The priest, too, at one time, enjoyed the privilege of a kiss upon the cheek of the blooming bride as one of his perquisites. Groomsmen claimed and took it, too, for a long period, but of late brides have become more fastidious, and reserve the kissing as a monopoly for the bridegroom and relatives. It is recorded by an old historian that, when Mary, Queen of Scots, married that handsome rake Lord Darnley, she did not fail to comply with the ordinary practice. "They kneel together," says the ancient annalist, "and many prayers were said over them; she tarrieth at the mass, and he taketh a kiss."—The arraying of the bride in the richest stuffs, and all of white, the wedding feast, and the giving of presents, are ancient customs. The love of expense, which is thought to be the characteristic of our material age, has led the moderns to make a great advance in the costliness of the bridal appurtenances. As far back, however, as the reign of James I., the presents given to the bride of Sir Philip Herbert amounted in value to £2,500, a large sum for those days. Great as was this amount, it has been much surpassed in our day. One of the Rothschilds, not long since, presented his niece with the bridal gift of a check for \$1,000,000, and the various other perquisites of the bride, in the way of diamonds and plate, amounted, it was said, to as much more. The display of the contributions from friends and relatives now generally obtains, and is a practice which has lately been sanctioned by royalty. On the marriage of the young princess of England with the prince of Prussia, in Feb. 1858, a buffet was prepared, upon which the tributes to the bride of gold, silver, rich stuffs, and precious stones, amounting to hundreds of thousands of pounds in value, were displayed not only before the unsurprised eyes of the court, but exhibited for the benefit of the astonished vulgar. Reporters and artists of the newspapers were admitted expressly that they might, in type and picture, reproduce for the curious public the wonders of the magnificent profusion with which the young princess had been endowed by crowned heads and wealthy magnates.—The ancients, for

some reason or other, esteemed certain days in the calendar as unlucky for matrimony. Lovers were told to beware of the whole month of May, and especially warned off from Feb. 11, June 2, Nov. 2, and Dec. 1. In the Orkney islands, in Scotland, "no couple," says Sir John Sinclair, "chooses to marry except with a growing moon, and some even wish for a flowing tide." It is particularly desirable that the weather should be clear, and that the ceremony should take place in the daytime, for

Blest is the bride on whom the sun doth shine.

BRIDEWELL, a house of correction. The name is derived from a hospital founded in 1553 by Edward VI., on the site of St. Bridewell, in Black Friars, in the city of London—a place which had been much resorted to by superstitious pilgrims. It was afterward used as a receptacle for vagrants, and a place of punishment for criminals. The name is used in this country for a prison to which delinquents are sent for punishment, generally having in view the reformation of the offender; but it is not limited to this. Its popular signification is nearly synonymous with penitentiary. All punishment except capital is, indeed, now understood to be intended, in part at least, for the reform of the criminals themselves, and hence various periods of imprisonment in common prisons are prescribed by law, as well as in the state prisons which are established in the different states. Practically, however, this benevolent purpose is accomplished to a very limited extent except as to juvenile offenders. In the city of New York there are a number of prisons and houses for detention and correction, which, together with the almshouses and city hospitals, are under the control of 10 governors elected by the citizens. There is, beside, a society for the reformation of juvenile delinquents, and another for reclaiming abandoned females. Similar establishments have been provided in all the large cities of this country.

BRIDGE, a structure, with one or more transverse apertures, raised for the convenience of passing a river, canal, or valley, and formed of various materials, as timber, stone, iron, &c. The construction of perfect bridges is a complex operation, and even among ancient nations of the highest civilization, did not always keep pace with the progress of the other arts. The type of the primitive bridges of earlier ages is to be found at the present day among rude and uncultivated nations, and consists simply of lintels of wood stretching from bank to bank, or when the span renders this impracticable, resting on piers or posts fixed in the bed of the river. The inevitable frequency of these in a rapid stream, and consequent contraction of the waterway, would result in a torrent injurious to navigation, and destructive to the piers themselves; hence it would be found essential to the stability of such structures, that the openings should be sufficiently wide to allow every facility for the passage of the water, and as this could only be

effected by arches or trusses, it is evident that these inventions were perfected before bridges of any magnitude became common. One of the most extraordinary bridges of ancient times was that which, according to Herodotus, Queen Nitocris constructed over the Euphrates at Babylon, and the length of which is given by Diodorus Siculus as five furlongs; the construction of this bridge is supposed by the most authentic writers to have been of the kind just alluded to, viz., with lintels or architraves extended from pier to pier. The bridges of Darius upon the Bosphorus, Xerxes upon the Hellespont, Pyrrhus upon the Adriatic, Cæsar upon the Rhine, and Trajan upon the Danube, are all celebrated in history, but were all constructed for the temporary purposes of war. In searching the records of antiquity for examples of stone bridges, the first that we can find are those constructed by the Romans; an exception may perhaps be made in regard to the Chinese, as we are not positively acquainted with the date of many of their structures; but in Egypt and India, the birthplaces of so many of the arts and sciences, the construction of the arch was entirely unknown; neither do we meet with it in the ancient works of Persia or Phœnicia, and even in classic Greece, at the period when her architecture was the finest in the world, and when Pericles had adorned Athens with splendid edifices, her people were unprovided with a bridge over the Cephissus, notwithstanding it crossed the most frequented thoroughfare to the city. Of the principal bridges of Rome, Gautier mentions, viz.: 1. The Pons Sublucius, the first ever built over the Tiber, and memorable from its defence by Horatius Cocles, against Porsenna; it was twice rebuilt, and the ruins of the last structure are still visible; from this the body of Heliogabalus was cast, with a stone about its neck, into the Tiber. 2. The Pons Triumphalis, sometimes termed Pons Vaticanus, from its proximity to the Vatican; it derived the former name from being the bridge over which those to whom the senate decreed a triumph passed on their way to the capitol. 3. The Pons Fabricius, named from its founder Fabricius, who erected it during the period of Catiline's conspiracy. 4. The Pons Cestius, built in the reign of Tiberius, and named from Cestius Gallus. 5. The Pons Janiculi, which led from the Campus Martius to the Janiculum. 6. The Pons Ælius, erected in the reign of the emperor Ælius Hadrianus; it is said this bridge had originally a roof of bronze, supported by 40 columns, but was despoiled during an incursion of the barbarians. Clement IX., who restored the bridge, placed on it 10 colossal statues of angels, carved in white marble, whence is derived its present name, Ponte San Angelo. 7. The Pons Milvius, built in the time of Sylla, on the ancient Via Flaminia at a short distance from the city; on this bridge Cicero arrested the Allobrogian ambassadors who were the bearers of letters to Catiline, and here also occurred the celebrated victory of Constantine over Max-

entius, when Constantine had the miraculous vision of the cross. 8. The Pons Senatorius, or Palatinus, still remaining, though in ruins, near the Palatine hill. From the fall of the Roman empire to the establishment of modern Europe, we have no account of any bridges worthy of note, except those built by the Moors in Spain, one of the finest of which was the bridge of Cordova, over the Guadalquivir, built by Issim, the son and successor of Abdul Aknan, the first of the Moorish kings of Spain. One of the most ancient bridges of modern Europe, is that over the Rhone at Avignon. It was built by a religious society called the "Brethren of the Bridge," which, according to Gautier, "was established upon the decline of the 2d and commencement of the 3d race of kings, when the state fell into anarchy, and there was little security for travellers, particularly in passing rivers, on which they were subject to the exactions and rapacities of banditti." This society was founded with a view to remedy these evils, by forming fraternities for the object of building bridges, and establishing ferries and caravansaries on the banks of the most frequently crossed rivers; their first establishment was on the Durance at Maupas, which name was afterward changed to Bonpas, in acknowledgment of their services. The bridge at Avignon was commenced in 1176, and completed in 1188. The association soon after built the bridge of Lyons, composed of 20 arches, and that of St. Esprit, over the Rhone, of 19 arches, beside many other structures of less note. The oldest bridge in England is that of Croyland in Lincolnshire, said to have been built in 860; it is formed by 8 semicircles which succeed each other, and are based upon a central arch; the ascent is so steep that only foot passengers can accomplish it. The bridge at Burton in Staffordshire, over the Trent, is the longest in England, and was built in the 12th century; it has 84 arches of squared freestone, and is 1,545 feet in length. The first stone bridge over the Thames, known as the old London bridge, was commenced in 1176 by Peter of Colechurch, who is supposed to have belonged to the "Brethren of the Bridge;" Peter died before the completion of his work, and was buried in the crypt of the chapel erected on the centre pier; this was in accordance with a singular custom of the society, that when any member died during the superintendence of an important work, his remains should be entombed within the structure; the work was completed in 1209, during the reign of King John, and was chiefly remarkable for its massiveness, and enormous surplus of material, having, in a span of 940 feet, no less than 20 arches, with piers varying in solidity from 25 to 84 feet, so that $\frac{1}{3}$ of the stream was occupied by the piers, and at low water a still greater proportion, leaving at that time less than $\frac{1}{4}$ of the whole span for waterway, and causing thereby a most dangerous fall. The bridge of the Holy Trinity at Florence, over the Arno, was built in 1569; it has a total length of 323

feet, is composed of 3 elliptical arches, and stands unrivalled as a work of art; the material used in its construction was white marble. The Rialto at Venice, designed by Michel Angelo, and erected in 1590, has a single span of 98½ feet, with 23 feet rise. The total number of bridges in that city was estimated by Gautier at 340. The bridge of Pont y Prydd, over the Taaf in Wales, is considered one of the most extraordinary in Britain; it was built in 1755, by an uneducated mason named Edwards, after the failure of 2 structures, which he had previously erected at the same spot; the first was carried away by a freshet after standing 2½ years, and the second failed in consequence of the weight on the haunches forcing out the keystone, before the parapet was finished; the present structure consists of a single circular arch, with a span of 140 feet, and a rise of 35 feet. The bridge of Mantes, over the Seine, was erected by Perronet and Housseau in 1765, and consists of 3 elliptical arches, the centre one having a chord of 128 feet. The famous bridge of Neuilly was constructed by Perronet in 1774; its total length is 766 feet, with a clear waterway of 689 feet; there are 5 arches of equal width, the curves being false ellipses, with chords of 128 feet, and versed sines of 32 feet. The bridge of St. Maixence, over the Oise, was also built by Perronet between 1774 and 1785; it is chiefly remarkable for the flatness of its arches, the chords being 76 feet 8 inches, while the versines are only 6 feet 8 inches, and the thickness of the voussoirs at the vertex of the arch 4 feet 8 inches. Blackfriars' bridge, over the Thames, in London, was built in 1771 by Mylne; the design is novel and beautiful, but unfortunately the material employed, viz., Portland stone, is unfitted for the purpose, as it soon becomes disintegrated under atmospheric influences; the structure has 9 arches, and a total length of 928 feet. Waterloo bridge, built by Rennie, in 1816, is 1,240 feet in length, and composed of 9 elliptical granite arches, each of 120 feet span, and a versed sine of 32 feet; the piers are fronted with coupled Doric columns, producing an elaborate effect; another peculiarity is that the roadway is level, differing in this respect from the other bridges across the Thames. Westminster bridge, completed in 1750, by Labalys, is remarkable as inaugurating a new era in bridge architecture; the novelty consisted in the manner of laying the foundations, which was effected by means of caissons, the depth of water and rapidity of the current rendering the expense of coffer-damming undesirably great; the bridge is 1,220 feet in length, and has in all 15 semicircular arches, 2 of which, however, are quite small. The new London bridge is an imposing structure of granite, and was erected by Rennie in 1831; it has a total length of 784 feet, with 5 elliptical arches, the span of the centre arch being 152 feet, and its versed sine 29 feet 6 inches. In the United States there are, as yet, comparatively few stone bridges of great size; the

heavy expense, as well as the amount of time required for the erection of such structures, being ill adapted to the pressing wants of a young nation. Perhaps the finest example we have is the High bridge of the Croton aqueduct, over the Harlem river at New York; its total length is 1,450 feet, and the top of the parapet is 114 feet above high water; there are in all 14 semicircular arches, 8 of which are of 80 feet span, and 6 of 50 feet. (See AQUEDUCT.)

In projecting the plan of a bridge, there are certain principal points, the consideration of which is indispensable to the safety and solidity of the structure. These may be included under 5 heads.—I. *The choice of position.* This is not always, nor even generally, at the disposal of the constructor, but is usually determined, in the country, by the direction of roads, and in cities, by the position of streets; when the choice is open, search should be made for the most solid ground. Local circumstances influence this point in so many different ways, that it would be impossible to lay down a specific rule; all that can be done is to indicate the general principles by which the position of the bridge should be determined. One condition, however, is essential, viz.: that the lateral faces of the piers shall be parallel with the direction of the current. This may in some situations require that the axis of the bridge shall be inclined relatively to the faces of the piers, and we then have what is termed an oblique or skew bridge. This construction will be necessary when the line of road connecting with the termini of the bridge forms an angle other than a right one with the course of the river. When there are many arches, this form of construction is undesirable, on account of the mechanical difficulties attending it.—II. *The vent or egress that must be allowed to the river.* This is a subject of very great importance, and vital to the durability of bridges. Its consideration involves 2 other points of inquiry: 1, having a knowledge of the bed of the river, to determine what quantity of water the bridge should allow to pass; and 2, this quantity being ascertained, to fix the surface or extent of the necessary discharge. In determining the 1st point, we must remember that the volume of water discharged by a river varies during different seasons of the year, and also from the effects of rains, and the melting of snow and ice; hence we must proportion the arches with regard to the effects of floods or inundations, and not solely with reference to the mean quantity of water in the bed of the river. In this connection, the bed of the river must be examined with care, as the nature and inclination of the ground which receives the water have much influence on the manner in which it discharges itself with more or less velocity, or penetrates the earth to a greater or lesser depth. Another circumstance to be considered is the time which the surplus water arising from a flood takes to discharge itself, or the velocity with which the discharge is made.

Since this velocity depends mainly on the slope of the river, which always diminishes as it recedes from its source, it is evident that if 2 bridges be built upon the same stream, the one that is nearer to the source will require a wider extent of discharge than the other. The general rule for calculating the quantity of water that flows in a river, is to multiply the surface of the section by the mean velocity of the current; but the difficulty of obtaining the mean velocity leads in practice to modifications of this rule, which are expressed by appropriate formulae, of which those developed by M. de Prony are most usually employed. 2. In regard to the outlet or discharge, the most essential point is the velocity which the water will assume under the arches of the bridge. If the breadth of the river were too much narrowed by the works erected on its bed, its velocity would increase, and it would form on one side a slack water, and on the other a declivity or shoot; thus the current would react against the bottom of the river, and undermine the foundations of the piles and buttresses. If, on the contrary, the breadth of the bed should be increased to too great an extent, by lengthening the ridge, the velocity would be checked, and its diminution would occasion deposits that would prove dangerous, by choking up the bed of the river. The nature of the soil has, of course, much influence, as if it be very tenacious and compact, approaching the nature of rock, it will not yield sensibly to any amount of action, while a loose and sandy soil would yield in such a manner as to destroy the bridge. The mean velocity which a current will acquire when its bed is narrowed by piers, can be obtained, with sufficient accuracy, by approximate formulae, though the problem is not susceptible of a rigorous solution. It has been observed above that it is dangerous to give a river too wide an outlet, since it might cause deposits; this, however, is not the only danger to be apprehended, as these would in time acquire sufficient consistency to resist the action of the current, and thus, in time of floods, force the water to pass with increased velocity under those arches that were less clogged by these deposits, and so undermine them. Consequently a bridge ought not to be composed of 2 parts, separated by an island, since, if one of the parts should be choked up, the whole current would flow to the other, and thus might destroy the bridge. It was by an accident of this nature that the bridges of Chazy and Roanne were swept away. It may be remarked in general, that bridges are never destroyed except by some error in the outlet, and that the cause of their ruin is ultimately too great a diminution of the section, arising either from expanding or contracting the dimensions of the structure in too great a degree. —III. *The form of the arches.* These are of 3 principal kinds: 1. The semicircular; these were anciently most in use, and have the advantage of being easy to construct, and forming a solid structure; their span is, however, restricted, on

account of the great relative height of this form of arch, and as they are usually made of moderate size, they have the inconvenience of considerably obstructing the passage of the water. 2. Arches of a flat vault, either forming portions of an ellipse, or else described by several arcs of circles of different radii. Elliptical arches are pleasing to the eye, but troublesome to construct, on account of the continual change in the form of the successive voussoirs; hence it is usual to employ curves, composed of a certain number of arcs of circles, varying generally from 3 to 11. The use of flat-vaulted arches was introduced into France about the close of the 17th century, and their adoption was due to the necessity of affording a wider discharge without considerably augmenting the height of the arches. This form not only answers this object effectually, but when the 2 diameters are not very unequal, presents as much solidity and facility in construction as the semicircular arch. 3. Arches formed from an arc of a circle, and these are of 2 principal kinds: 1st, those in which the springing planes are under water, examples of which are seen in the bridge of St. Esprit, and the ancient bridge of Avignon; this form has the disadvantage of greatly reducing the discharge. In the 2d kind the springing planes are on a level with the highest water of the river, as in the bridge of Louis XVI. at Paris. In this case the arc is necessarily very low, and the lateral pressure of the voussoirs so considerable as to require great care in the construction. Beside the 3 of which we have spoken, there is the Gothic arch, composed of 2 arcs of a circle, sometimes though rarely employed; it has the fault of greatly reducing the outlet.—IV. *Size of arches.* Though this is usually determined by local circumstances, yet there are a few general principles to be considered. Small arches are best adapted to quiet rivers, whose waters do not rise to any considerable height, while large arches are best suited to torrents, where it is difficult to lay the foundations, and where the piers are exposed to damage by obstacles brought down against them by the current. As a general rule, wide arches should be adopted in large rivers, especially when they are subject to inundations; this is, however, influenced by the expense of the foundations, as well as the materials employed in construction, large arches requiring more solidity than small ones. The nature and size of vessels which navigate the river have also an important bearing on this subject. In relation to the width allowed to arches, 2 plans are pursued: in one, the apertures are all equal, giving the tops of the vaults the same elevation above the water, and enabling the constructor to use the same centering for all the arches. The economy of this arrangement may, however, be counterbalanced by the necessity of forming considerable embankments at the termini of the structure. In the other plan, the diameters of the arches are unequal, allowing a reduction of the embank-

ments, thus diminishing the obstacles to the approaches. The advantages of both systems are sometimes combined by forming the arches of the same width, and placing the springing planes at heights decreasing from the centre to either extremity of the bridge.—V. *The breadth of the bridge.* This depends wholly on the locality, and should be proportioned to the importance of the road on which it is built. For country roads a width of 14 to 16 feet will be sufficient, particularly if the bridge be a short one. On what are termed roads of the 2d class, 20 to 25 feet should be allowed, which will afford sufficient room for 2 carriages to pass at once, beside a space for foot passengers. On roads of the 1st class, 30 to 35 feet is considered a fair allowance, while in the interior of cities from 30 to 60 feet will be required. The Pont Neuf at Paris, which is perhaps one of the greatest thoroughfares in the world, has a width of about 70 feet between the parapets.—Timber, as a material for bridges, is much less costly and more easily worked than stone; but all such structures lack the advantage of durability, and are more troublesome to keep in repair. The oldest wooden bridge of which we have any account is the Pons Sublicius already mentioned, as it existed at the time of Horatius Cocles; it is supposed that no iron whatever was used in its construction. Cæsar's bridge was also of wood, and so was Trajan's across the Danube, though it is probable that the piers of the latter were of stone. One of the most famous wooden bridges on record is that of John Ulrich Grubenmann, an uneducated carpenter of Switzerland; it was built at Schaffhausen in 1757, and was composed of 2 wooden arches with the respective spans of 193 and 172 feet, supported at either terminus by abutments, and at their junction by a stone pier. After Grubenmann's death the bridge began to settle, as the oak beams, which had been placed too low, and not sufficiently exposed to the air, rotted at their points of contact with the stone abutments. Owing to the peculiar arrangement of the structure, by which the principal supports were so intimately connected together, it became necessary to support the whole bridge before a single part could be removed; this was performed by means of screw-jacks, and the decayed timbers replaced. No other repairs were ever required, and the bridge excited much attention as a remarkable specimen of carpentry. It was burnt by the French in 1799, having lasted 42 years. In modern times, the wooden bridges of Germany and France have taken high rank from their scientific combination in arrangement; but during the last few years the United States have justly claimed the precedence for simplicity, mechanical perfection, and boldness of design. The upper Schuylkill bridge at Philadelphia has the remarkable span of 340 feet. It was designed and built by L. Wernwag, and consists of 6 ribs, each formed of a curved, solid built beam, connected with an upper single

beam by radial pieces, diagonal braces, and inclined iron stays. In the Trenton bridge, the roadway bearers are suspended from curved, solid built beams, by iron bar chains and suspension rods; it consists of 5 spans, the centre and widest being 200 feet. Burr's plan, which has received considerable favor on railroads and aqueducts, particularly in Pennsylvania, consists essentially of open built beams of straight timber, connected with curved, solid built beams, termed arch timbers, and which are formed of several thicknesses of scantling, between which the framework of the open built beam is clamped. Town's plan, commonly known as the lattice truss, consists of two main strings, each formed by two or three parallel beams of 2 thicknesses, breaking joints with a series of diagonal pieces, crossing each other and inserted between the parallel beams, being connected with the strings and with each other by tree-nails. As the timbers are of a uniform cross section and length, the construction is simple and economical, though the plan is not well adapted to the resistance of variable strains and jars. Long's truss consists in forming the upper and lower strings of 3 parallel beams, between which are inserted the cross pieces, or posts, which are formed of beams in pairs, placed at regular intervals along the strings, and connected with them by wedge blocks; between each series of posts are placed braces and counterbraces, suitably connected by tree-nails, and in long spans arch braces are also introduced. In Howe's truss, the upper and lower strings are each formed of several thicknesses, breaking joints, while on the upper side of the lower string, and the lower side of the upper, are placed blocks of hard wood inserted in notches, and bevelled on each side to form a support for the braces and counterbraces; through the blocks are passed bolts of iron to connect the 2 strings, and by means of a nut and screw any desired amount of tension can be given to the truss. The preceding combinations are those which are in general use in the United States.—Suspension bridges are of very remote origin. Kirehen, in his "China Illustrated," mentions one which is still to be seen in the province of Inman, and according to tradition was built by the emperor Mingus, A. D. 65; it is formed of chains, supporting a roadway of plank resting directly upon them, and is 330 feet in length. The ancient Peruvians also constructed numerous bridges over the Andes, the principal material being ropes formed of the bark of trees; sometimes a roadway was constructed, and at others the transit was effected by means of a basket supported by the rope, and drawn over alternately from one side to the other. The same plan is used at the present day. Rope suspension bridges have also been used in Europe; they were employed in France, at the siege of Poitiers, to cross the river Clain, and Douglass mentions their use in Italy in 1742. Iron suspension bridges of large span, however, are of

modern date. The first of this kind erected in England was in 1819, and was built across the Tweed at Berwick, by Captain Sir Samuel Brown; it was constructed with chain cables, 12 of which were used in all, 6 being placed on either side of the roadway; its span was 449 feet and versed sine 80 feet. The same engineer constructed the Brighton chain pier, and the bridge at Montrose; the former was built in 1828, and destroyed by a gale of wind in Nov. 1836; its entire length was 1,186 feet, in four openings, each of 255 feet span, and 18 feet deflection. The latter was erected in 1829, and in Oct. 1838, the roadway was totally destroyed by a hurricane; Mr. Rendell reconstructed it, and materially stiffened the structure by the system of trussing he adopted. The bridge over the Menai Straits, by Telford, was built in 1826; its span was 580 feet, and the clear height of the roadway above the water 102 feet; it was seriously injured by a violent gale, which produced so great an oscillation of the main chains, as to dash them against each other and break off the rivet heads of the bolts; a recurrence of the accident was provided against by suitable bracing, and the iron roadway beams strengthened by an additional number constructed of timber, as it was found that the former were frequently bent and even broken by the undulations of the bridge in a gale. The Conway bridge was also built by Telford, in 1826; it crosses an estuary that divides the towns of Bangor and Chester; its span is 327 feet, with a deflection of 22½ feet. The Hammersmith bridge over the Thames was built by Tierney Clark, in 1824, and has a span of 423 feet. One of the most remarkable suspension bridges in Europe is that of Freyburg in Switzerland; the cables are of wire, and the span is 870 feet; it was erected in 1834 by M. Chaley; the roadway is 167 feet above the surface of the river, and although the whole is remarkably light and fragile in appearance, it has withstood several severe tests uninjured, and is still considered a safe bridge. The Pesth suspension bridge over the Danube was commenced in 1840 by Tierney Clark, and finished in 1849, when it was crossed by a part of the Hungarian army retreating before the Austrians, and followed immediately by the latter; both armies with their heavy trains of artillery, ammunition, and baggage wagons; it is estimated that of the Austrian troops alone 80,000 crossed the bridge in 2 days; no severer test could have been applied to the structure, and the admirable manner in which it sustained itself reflects the highest credit upon its constructor; the clear waterway is 1,250 feet, and the centre span 670 feet, while the towers are 200 feet in height from the foundations. In the United States, the first suspension bridges were built by Mr. Finley between 1796 and 1810, and were all of small dimensions, and constructed with chain cables. During the last few years, however, a large number of structures have been erected, and some of great size;

the plan of wire cables has been universally adopted in their construction. The Wheeling bridge over the Ohio was built in 1848, by C. Ellet, and blown down in May, 1854; its span was 1,010 feet; this bridge attained considerable notoriety from the litigation it caused, strenuous and long-continued efforts having been made during its continuance to obtain its removal on account of the alleged injury to navigation. The Belview bridge at Niagara, a slight structure, was built by the same engineer in 1848, and had a span of 759 feet; it was removed in 1854, and its cables incorporated in the bridge constructed by Mr. Roebling. At Lewiston, 7 miles below the falls of Niagara, a bridge was built in 1850 by E. W. Serrell, with a span of 1,040 feet. The finest structure of this kind in the country, however, and perhaps in the world, is Roebling's railway bridge at Niagara; its span is 821 feet, and deflection 59 feet; 14,560 wires are employed in the cables, and their ultimate strength is estimated at 12,000 tons; the elevation of the railway track above the water is 245 feet, and so great is the stiffness of the roadway that the passage of ordinary trains causes a depression of only 3 to 4 inches; the bridge was completed in 1855, and though continually subjected to the passage of heavy trains, has thus far proved a complete success; though at the time of its erection predictions of failure were made by the first European engineers, its performance up to the present time seems to justify Mr. Roebling's confidence in its permanence. The distrust in suspension bridges for ordinary transit, which has become so general through the frequent failure of such structures, is mainly due to the slight and imperfect way in which most of them have been put up, and to a misapprehension of the true principles of construction by the engineers, many of whom were entirely unfitted for their place. Many instances of failure might be enumerated, but perhaps the most glaring as well as recent is that of the Rochester bridge, erected a year or two since over the Genesee river, but which, although of considerable span, was hardly able to sustain its own weight, and fell shortly after its completion from the weight of a few inches of snow.—Cast-iron bridges are of recent origin. The first that was erected in England was at Colebrook Dale in 1779, and consists of 5 curved ribs, nearly semi-circular in shape, and each formed of 8 concentric arcs, connected by radial pieces; its span is 100 feet, and rise 40 feet. The Wearmouth bridge was built in 1790, and has a striking appearance from its great span as well as height above the water; it is 100 feet above high-water level, and has a span of 240 feet, with a rise of 30. The Pont d'Austerlitz, at Paris, has 5 arches, each with a span of 107 feet, and a rise of $\frac{1}{4}$ the span; it was erected in 1805 by Lamande. The Pont du Carrousel, in the same city, was built by Polonceau in 1838, and consists of 8 arches, with a span of

150 feet, and a rise of 16. The largest iron arch bridge is the Southwark bridge over the Thames, built by Rennie in 1818; it consists of 3 arches, 240 feet in span, and with a rise of 24 feet.—Of wrought-iron bridges, the most remarkable are the Britannia and Conway tubular bridges, erected by Stephenson. The Britannia bridge crosses the Menai strait at 108 feet above high water, and consists of 4 spans, 3 of 230 feet each, and 2 of 459 feet, forming a huge tube of wrought iron, through which passes the Chester and Holyhead railway. The Conway bridge has a single span of 400 feet, and is only 18 feet above the level of high water; it was finished in 1848, and the Britannia bridge in 1850. The tubes were constructed, in each instance, at a distance from their respective destinations, and afterward floated to their places by pontoons, and raised by hydraulic presses, forming the most gigantic application ever made of these powerful machines. A large bridge on the tubular principle is now under process of construction at Montreal across the St. Lawrence; it is designed for a railway structure, and will be called the Victoria bridge; it is to be 2 miles in length; the total amount of masonry in the bridge will be 3,000,000 cubic feet, which, at 18½ feet to the ton, gives a total weight of about 22,000 tons; the total weight of iron in the tubes will be 10,400 tons; the bridge, when completed, is estimated to cost the sum of \$5,000,000.—Movable bridges are of several kinds, and receive different names from the manner in which they are constructed and operated. The term is usually applied to a platform properly supported between 2 points of a fixed bridge, and so constructed as to be readily removed and replaced. Drawbridges are those which are raised or lowered by means of a horizontal axis and counterpoise connected with the platform. Turning or swinging bridges are those which turn horizontally about a vertical axis, while rolling bridges are those which rest upon rollers, and can be propelled horizontally on them, so as to close or open the passage. We sometimes meet with a still different class of movable bridges, where the platform is supported by boats, or any other buoyant body, and which can be introduced in the waterway, or withdrawn from it, at convenience.

BRIDGE, MILITARY. The art of constructing temporary bridges for the passage, by troops, of large rivers and narrow arms of the sea, was well known to the ancients, whose works in this respect are sometimes of surprising magnitude. Darius passed the Bosphorus and Danube, and Xerxes the Hellespont, by bridges of boats, the description of which we find in Herodotus. The army of Xerxes constructed 2 bridges across the Dardanelles, the first of 360 vessels, anchored head and stern alongside each other, their keels in the direction of the current, the vessels connected with each other by strong cables, over which planks were laid, fastened by a rail on either side, and

covered in by a bed of earth. The 2d bridge had 314 vessels, and was similarly constructed. According to Arrian, Alexander had a regular pontoon-train of light boats attached to his army. The Romans had wicker-work vessels, covered with the skins of animals, destined to support the timber platform of a bridge; these formed a part of the train of their armies until the end of the empire. They, however, also knew how to construct a more solid kind of military bridge, whenever a rapid river had to be crossed; witness the famous bridges on piles, on which Cæsar passed the Rhine.—During the middle ages we find no notice of bridge equipages, but during the 30 years' war the various armies engaged carried materials with them to form bridges across the large rivers of Germany. The boats used were very heavy, and generally made of oak. The platform of the bridge was laid on trestles standing in the bottoms of these boats. The Dutch first adopted a smaller kind of vessel, flat-bottomed, with nearly vertical sides, pointed head and stern, and both ends projecting, in an inclined plane, above the surface of the water. They consisted of a framework of wood, covered with sheets of tin, and were called pontoons. The French, too, according to Folard, claim the invention of pontoons made of copper, and are said to have had, about 1672, a complete pontoon train. By the beginning of the 18th century all European armies had provided themselves with this kind of vessels, mostly wooden frames, covered in with tin, copper, leather, or tarred canvas. The latter material was used by the Romans. The boats were small, and had to be placed close together, with not more than 4 or 5 feet clear space between them, if the bridge was to have any buoyancy; the current of the water was thereby greatly obstructed, the safety of the bridge endangered, and a chance given to the enemy to destroy it by sending floating bodies against it.—The pontoons now employed by the continental armies of Europe are of a larger kind, but similar in principle to those 100 years ago. The French have used, since 1833, a flat-bottomed vessel with nearly vertical sides, diminishing in breadth toward the stem, and also, but a little less, toward the stern; the 2 ends rise above the gunwales and are curved like those of a canoe. The dimensions are: length, 31 ft.; breadth, at top, 5 ft. 7 in.; at bottom, 4 ft. 4 in. The framework is of oak, covered with fir planking. Every pontoon weighs 1,650 lbs. and has a buoyancy (weight of cargo which would sink the vessel to the top of the gunwales) of 18,675 lbs. When formed into a bridge, they are placed at intervals of 14 ft. clear space from gunwale to gunwale, and the road of the bridge is 11 ft. wide. For the advanced guard of an army a smaller kind of pontoon is used, for bridging over rivers of less importance. The Austrian pontoons are similar to the larger French pontoon, but divided transversely in the middle, for more convenient carriage, and put together in the water.

Two vessels placed close alongside each other, and connected by short timbers, a longitudinal timber supporting the balks of the platform, constitute a floating pier of a bridge. These pontoons, invented by Birago, were introduced in 1823. The Russians have a framework of wood for their pontoons, so constructed that the centre pieces, or thwarts, may be unshipped; over this frame is stretched sail-cloth, covered with tar or a solution of India rubber. They are in length, 21 ft. 9 in.; breadth, 4 ft. 11 in.; depth, 2 ft. 4 in., and weigh 718 lbs. each. Breadth of road of bridge, 10 ft.; distance from pontoon to pontoon, 8 ft. The Russians also have pontoons with a similar framework, covered over with leather. The Prussians are said to have been the first to divide their pontoons transversely into compartments, so as to prevent one leak from sinking them. Their pontoons are of wood and flat-bottomed. The span or clear distance between the pontoons, in their bridges, varies from 8 to 16 ft., according to circumstances. The Dutch, since 1832, and the Piedmontese, have pontoon trains similar to those in the Austrian service. The Belgian pontoon has a pointed head, but is not contracted at the stern. In all continental armies small boats to carry out the anchors accompany the pontoon train.—The British and the U. S. armies have entirely abandoned the use of boats for the formation of their pontoon trains, and adopted hollow cylinders of light material, closed on all sides, to support their bridges. In England the cylindrical pontoons, with conical, hemispherical or paraboloidal ends, as constructed in 1823 by Col. Blanchard, were adopted in 1836 to the exclusion of all other kinds. The larger British pontoon is 24½ ft. long and 2 ft. 8 in. in diameter. It is formed of sheet tin, framed round a series of wheels constructed of tin, having hollow cylinders of tin for their spokes; a larger tin cylinder, 1½ in. in diameter, forms their common axis, and runs through the entire length of the pontoon.—Experiments have been made in the United States with India rubber cylindrical pontoons. In 1836 Capt. (afterward Col.) Lane constructed bridges over a deep and rapid river in Alabama with such pontoons, and in 1839 Mr. Armstrong submitted similar floats, 18 ft. long, 18 in. in diameter when inflated, and weighing 39 lbs. each, 8 to form 1 link of the bridge. Pontoons of inflated India rubber were, in 1846, introduced in the U. S. army, and used in the war against Mexico. They are very easily carried, from their lightness and the small space they take up when folded; but, beside being liable to be damaged and rendered useless by friction on gravel, &c., they partake the common faults of all cylindrical pontoons. These are, that when once sunk in the water to ¼ of their depth, their immersion becomes greater and greater with every equal addition of load, the reverse of what should be; their ends, moreover, easily catch and lodge floating matter; and finally, 2 of them must be joined

to a raft by a platform before they can be moved in the water, whereas boat pontoons are as capable of independent motion in the water as common boats, and may serve for rowing rapidly across the river a detachment of troops. To compare the buoyant power of the cylindrical pontoon with that of the boat pontoon, the following may suffice: The French pontoon supports about 20 ft. of bridge, and has a buoyancy (the weight of the superstructure deducted) of more than 150 cwt. A British raft of 2 pontoons, supporting about the same length of bridge, has a buoyancy, superstructure deducted, of only 77 cwt., ¼ of which is a safe load. A pontoon train contains, beside the pontoons, the oars, boat-hooks, anchors, cables, &c., necessary to move them about in the water, and to fix them in their position, and the balks and planks (chesses) to form the platform of the bridge. With boat pontoons, every pontoon is generally secured in its place, and then the balks and chesses stretched across, with cylindrical pontoons, 2 are connected to a raft, which is anchored at the proper distance from the end of the bridge, and connected with it by balks and chesses. Where circumstances admit of it, whole links, consisting of 3, 4, or 5 pontoons bridged over, are constructed in sheltered situations above the site fixed on for the bridge, and floated down successively into their positions. In some cases, with very experienced pontoniers, the whole bridge has been constructed on one bank of the river and swung round by the current when the passage was attempted. This was done by Napoleon when crossing the Danube, the day before the battle of Wagram. The whole of this campaign is highly instructive with regard to the passing of large rivers in the face of the enemy by military bridges.—Pontoon trains are, however, not always at hand, and the military engineer must be prepared to bridge over a river in case of need, without them. For this purpose a variety of materials and modes of construction are employed. The larger kind of boats generally found on navigable rivers are made use of for bridges of boats. If no boats are to be found, and the depth or configuration of bottom of the river renders the use of floating supports necessary, rafts of timber, floats of casks, and other buoyant bodies may be used. If the river is shallow, and has a hard and tolerably level bottom, standing supports are constructed, consisting either of piles, which form the most durable and the safest kind of bridge, but require a great deal of time and labor, or of trestles, which may be easily and quickly constructed. Sometimes wagons loaded with fascines, &c., and sunk in the deeper places of the river, will form convenient supports for the platform of a bridge. Inundations, marshes, &c., are bridged over by means of gabions. For narrow rivers and ravines, where infantry only have to pass, various kinds of suspension bridges are adopted; they are generally suspended by strong cables.—The construction of

a military bridge under the actual fire of the enemy is now a matter of but rare occurrence; yet the possibility of resistance must always be provided for. On this account the bridge is generally constructed in a reëntering bend of the river, so that the artillery placed right and left sweeps the ground on the opposite bank close to where the bridge is to land, and thus protects its construction. The concave bank, moreover, is generally higher than the convex one, and thus, in most cases, the advantage of command is added to that of a cross fire. Infantry are rowed across in boats or pontoons, and established immediately in front of the bridge. A floating bridge may be constructed to carry some cavalry and a few light guns across. The division of the river into several branches by islands, or a spot immediately below the junction of some smaller river, also offers advantages. In the latter, and sometimes in the former case, the several links of the bridge may be composed in sheltered water, and then floated down. The attacking party, having commonly to choose between many favorable points on a long line of river, may easily mislead his opponent by false attacks, and then effect the real passage at a distant point; and the danger of scattering the defending forces over that long line is so great, that it is nowadays preferred to keep them concentrated at some distance from the river, and march them in a body against the real point of passage as soon as it has once been ascertained, and before the enemy can have brought over all his army. It is from these causes that in none of the wars since the French revolution has the construction of a bridge on any of the large rivers of Europe been seriously contested.

BRIDGE, NATURAL I. In Virginia. This celebrated natural curiosity is in the southeastern corner of Rockbridge co., Virginia, in the midst of the wild scenery of the Blue Ridge region, and almost under its shadows upon its western side. The James river, after winding its way around the points of the smaller ridges of the Appalachian chain, is seen in view of this locality to penetrate this greatest barrier of the eastern and western waters, by one of its few great gaps. The stage road from Buchanan to Lexington follows the general course of the long ridges, continuing up the valleys of the smaller water courses, and crossing these as they diverge to the right in their rapid descent toward the James river. At a point 12 miles from Buchanan, passing around the foot of a hill upon a rapidly descending road, the traveller suddenly finds himself upon a narrow track like a lane between two high wooden fences. From his horse he may look over these fences into open space; but nothing would suggest to him that he is upon the great natural bridge so celebrated in the history of our country, and associated with the names of our most revered statesmen, who have visited and described it. A view from the outside of these barriers, down the deep gorge, is necessary to open to him the sub-

limity of this grand natural structure. He finds himself suspended over the centre of a narrow chasm, not quite 100 feet wide, but 218 feet deep, its 2 smooth parallel walls of stratified limestone inclining at the same angle, which varies but a few degrees from the vertical. The arch which supports him is of such irregular form upon the surface, that a view of its solid dimensions is easily obtained from various points upon its edge. A plumb-line dropped from its centre down the vertical face of the rock swings clear at the depth of 40 feet. Such is the thickness of the crown of the arch. Toward its sides this regularly increases with a graceful curve, as in an artificial structure, conveying an impression of strength and solidity, such as one derives from no work of man. And when its breadth is found to be full 60 feet, and the stone is proved to be of most substantial character—a highly silicious limestone, extremely hard to break, formed in massive blocks and strata, with no evidence upon its weathered surface of a tendency to decompose and crumble away, but on the contrary, retaining upon its exterior the full hardness and close texture of its internal portion, and having beside no interstratified layers of softer rock, by the removal of which it might be undermined, and the chasm be thus produced—then it becomes apparent that the insignificant little stream, which now runs in this deep gorge, has had no agency in shaping and producing this wonderful channel. Mightier forces have worn away the hard strata, more powerful torrents than any that now flow over the surface—set in motion probably when this portion of Virginia was shaken by those great convulsions which displaced its piles of strata to the depth of thousands of feet, bringing into juxtaposition along the line of fissures, which are still to be traced, groups of rock everywhere else found separated by other formations, the aggregate thickness of which might be measured by miles. The mineral springs, so common in this region, and particularly along the lines of these disturbances, flow up from great depths, as is made evident by the high temperature of many of them. Together with the “faults” of the rock formations, they testify to the extraordinary convulsions of the surface, of the effect of which the bridge and its chasm are an enduring monument, or at least until other similar catastrophes shall again change the form of the surface. From below, the bridge is seen to great advantage along the course of the little stream, called Cedar creek, which flows under it. But away from this gorge it is not a conspicuous object in the scenery, as it does not rise above the general level around it. The limestone rock of which it is composed is that of the great valley of Virginia, a part of the great calcareous formation near the base of the group of the Appalachian system, and one of the lowest of the stratified rock formations. In this vicinity it does not appear, on a slight examination, to contain fossil remains of shells.—At the base of

the bridge many names are carved upon its steep walls; and every American has learned from his school-books to look among them for the initials of George Washington, who is said to have climbed to a good height, and cut them conspicuously upon the rock. Inquiry at the spot, however, does not confirm these early lessons, the residents near the bridge having no tradition or other knowledge of this interesting event in the life of Washington. II. In Alabama. This is described by the late Prof. Tuomey as rivalling that of Virginia. It is in Walker county, and in the sandstone called the millstone grit, which underlies the coal formation. It spans about 120 feet, and its height is about 70 feet. A smaller bridge connects it with the bluff beyond. The lines of stratification of the sandstone give the structure the appearance of having been artificially built up with massive blocks. It is in the midst of a region of wild and romantic beauty, high escarpments of the same sandstone being seen standing out in the face of the hills around. III. In California. There are 2 remarkable natural bridges across the Ohyote Creek, near Vallecita, in Calaveras county, having immense arches, whose surfaces appear as if carved into clusters of beautiful fruits and flowers, doubtless the result of volcanic action at some remote period.

BRIDGE-HEAD, or *TÊTE-DE-PONT*, in fortification, a permanent or field work, thrown up at the further end of a bridge in order to protect the bridge, and to enable the party holding it to manœuvre on both banks of the river. The existence of bridge-heads is indispensable to those extensive modern fortresses situated on large rivers or at the junction of 2 rivers. In such a case the bridge-head is generally formed by a suburb on the opposite side and regularly fortified; thus, Castel is the bridge-head of Mentz, Ehrenbreitstein that of Coblenz, and Deutz that of Cologne. No sooner had the French got possession, during the revolutionary war, of Kehl, than they turned it into a bridge-head for Strasbourg. In England, Gosport may be considered the bridge-head of Portsmouth, although there is no bridge, and though it has other and very important functions to fulfil. As in this latter case, a fortification on the further side of a river or arm of the sea is often called a bridge-head, though there be no bridge; since the fortification, imparting the power of landing troops under its protection and preparing for offensive operations, fulfils the same functions, and comes, strategically speaking, under the same denomination. In speaking of the position of an army behind a large river, all the posts it holds on its opposite bank are called its bridge-heads, whether they be fortresses, intrenched villages, or regular field-works, inasmuch as every one of them admits of the army debouching in safety on the other side. Thus, when Napoleon's retreat from Russia, in 1813, ceased behind the Elbe, Hamburg, Magdeburg, Wittenberg, and Torgau were his bridge-heads on the right bank of that river. In field fortification, bridge-heads are mostly very simple

works, consisting of a *bonnet à prétre*, or sometimes a horn-work or crown-work, open toward the river, and with a redoubt close in front of the bridge. Sometimes a hamlet, a group of farm-houses, or other buildings close to a bridge, may be formed into a sufficient bridge-head by being properly adapted for defence; for, with the present light-infantry tactics, such objects, when at all capable of defence, may be made to offer a resistance as great, or greater, than any field-works thrown up according to the rules of the art.

BRIDGENORTH, a parliamentary and municipal borough and town of Shropshire, England, on the Severn. It is said to be of Saxon origin, and was anciently called *Brugia*, *Brug*, or *Bruges*. The town consists of an upper and a lower part, connected by a handsome bridge of 6 arches. The upper town is built on a rock, on the summit of which stand an old castle and 2 churches. A free grammar school, founded in 1508, with an income from endowments of \$250 a year, and with 86 scholars in 1852, and, among various other schools, a national school, founded in 1847, a town hall of considerable antiquity, a public library, and a theatre, are among the most notable buildings in the place. An extensive carrying trade is maintained on the Severn, and there are 8 carpet manufactories, 2 large mills for spinning of worsted, and 5 annual fairs. Bridgenorth sends 2 members to the house of commons. Pop. of the municipal borough, in 1851, 6,172, of the parliamentary borough, 7,610, and of Bridgenorth poor law union, 15,608. The London, Aylesbury, and Shrewsbury railway passes Bridgenorth.

BRIDGEPORT, a city and half shire town in Fairfield co., Conn., situated on Long Island sound, 59 miles from New York, by the New York and New Haven railroad. It is the most important station on the road, and the terminus of the Housatonic and Naugatuck railroads—the town, in point of wealth, ranking as 8d in the state. The mouth of Pequonnock creek furnishes a harbor, safe and capacious, but somewhat injured by a sand-bar. A good deal of coasting business is done here, and 2 steamboats make daily passages to and from New York. Near the shore the land is level, but soon rises to an elevation of 100 feet, commanding a beautiful view of the sound. The elevation, called Golden hill, is crowned with residences, remarkable for taste and elegance. The city is well built, has a gas and a water company, and many of its streets are shaded with noble elms. The immediate vicinity was settled in 1639, but the city (formerly called Newfield) is almost wholly the growth of the present century. The town, formerly a part of Stratford, was incorporated in 1821, and the city charter was obtained in 1836. In 1850 the population of the city was 6,080, of the town 7,560, showing an increase of more than 75 per cent. during the previous 10 years. In 1858 the population of the city is estimated at 7,500, that of the town at 11,000. The prosperity of the place is mainly owing to its manufactures.

There are 7 large carriage factories, with smaller establishments for springs, coach lace, &c. Saddles for the southern market, with harnesses, &c., are also largely manufactured here, and there are several iron foundries. Two daily and 2 weekly papers are published, and there is a valuable public library of 8,000 volumes. There are 17 religious societies, including 2 African, with 14 churches.—**EAST BRIDGEPORT** is a suburb comprising 250 buildings, mainly upon the property of Messrs. P. T. Barnum and N. H. Noble, having sprung up within the last 5 years. It contains the large establishment of the Wheeler and Wilson sewing-machine company. The buildings, calculated for the accommodation of 500 operatives, occupy the four sides of a square, 288 feet on a side. Three hundred of the well-known machines are now manufactured per week. Bridgeport is the birthplace of the dwarf Charles Stratton, more generally known as Gen. Tom Thumb. Iranistan, the celebrated oriental villa of Mr. P. T. Barnum, was situated about a mile from the city, on the Fairfield road. It was burnt in 1857, but the beautiful shrubbery and grounds remain uninjured.

BRIDGET, BRIDGIT, or BRIGIDA, SAINT, patroness of Ireland, born at Fochard, county of Armagh, about the end of the 5th, or the beginning of the 6th century. She withdrew from the world in early youth, received the habit of a nun at the hands of St. Mel, nephew and disciple of St. Patrick, and built herself a cell under a large oak, calling it Kill-dara, or Kildare, the cell of the oak. She was soon followed by other virgins from the surrounding country, and in a short time found herself at the head of a flourishing order, which branched forth into different parts of Ireland, and even passed over the seas into England, Scotland, Germany, and France. It subsisted for many centuries, but is now extinct. Several biographies of this saint have been written, but they contain little more than a recital of her miracles. It is related that her body was discovered in 1185, at Down-Patrick, and was there kept until the destruction of its shrine by Henry VIII. The head is said to be still preserved in the Jesuits' church at Lisbon. Her feast falls on Feb. 1.

BRIDGET, SISTERS OF SAINT, a religious order founded in 1606, by Dr. Delany, bishop of Kildare and Leighlin, Ireland, and approved by Pope Gregory XVI. The rule embraces the 3 vows of poverty, chastity, and obedience, and has special reference to the direction of parish schools. The habit is black, similar to that of the Presentation nuns and the Sisters of Mercy. The first convent of the order was opened at Tullow, county Carlow, and the second at Mount Rath, in 1808. One was established at Buffalo, N. Y., about 1858.

BRIDGETON, the capital of Cumberland co., N. J., pop. 3,000, situated on both sides of Cohansey creek, 20 miles from its entrance into Delaware bay. The town is neatly built, and its opposite parts are connected by a drawbridge across the creek. Beside several

churches, academies, banks, and various factories, it contains a public library, a court house, and an extensive iron foundry.

BRIDGETOWN, the capital of the island of Barbadoes; pop. in 1851, 20,026. It is well built along the N. shore of Carlisle bay, and is surrounded by plantations. In the neighborhood are the residence of the bishop, the governor's house, and St. Peter's barracks, affording quarters for 1,200 men, and possessing a complete arsenal and a fine parade ground. Bridgetown was made a city in 1843. It contains the cathedral of St. Michael, the council-house, a jail, and a well-supplied market.

BRIDGEWATER (Indian name, *Nunketess*), a township of Plymouth co., Mass., on the Fall river and Bridgewater branch railroads, 27 miles S. E. of Boston, and 20 miles N. W. of Plymouth. It was very extensive prior to 1790, at which time it had 4,975 inhabitants. Three new townships were afterward separated from it, and incorporated under the names of East, North, and West Bridgewater. It once formed part of Duxbury, and was purchased of the Indians in 1645, by Capt. Miles Standish, who gave in exchange for the whole territory 7 coats, 4 moose skins, 10 yards of cotton, 20 knives, 8 hoes, and 9 hatchets. It was incorporated as a separate precinct in 1716, and the first church was built the following year. Old Bridgewater is pleasantly situated on Taunton river, embraces some of the best land in the county, and possesses considerable commercial importance. It is the seat of a state normal school for both sexes, of an academy, incorporated in 1799, and of a state almshouse. It has 16 other schools, 1 Episcopal, 1 Swedenborgian, and 3 Congregational churches, 2 rolling mills, 3 furnaces, 1 brass foundry, 2 large machine shops, 2 saw mills, 4 factories of boots and shoes, 1 of nails, 1 of paper, and 1 of augers. Vessels of 150 tons are sometimes built here, and floated down the river when the current is swollen by freshets. Pop. in 1855, 3,363.—**EAST BRIDGEWATER** is about 25 miles S. E. of Boston, on Beaver and Sauctuck rivers, branches of the Taunton. It has important manufactures, some of which have been carried on since its first settlement, about 1688. Cannon were cast here during the revolution, and small arms are still made to some extent. There are 2 forges, 1 furnace, 3 grist mills, 7 saw mills, 6 factories of boots and shoes, 1 of cotton goods, 1 of nails, 1 of edge tools, 1 of cotton-gins, 9 schools, an academy, founded in 1817, and incorporated in 1837, and 6 churches, 3 Congregational, 1 Methodist, 1 Swedenborgian, and 1 Universalist. The township contains 2 villages, one of which bears the same name, and is situated on the Bridgewater branch of the Old Colony and Fall river railroad. Pop. of township in 1855, 2,980.—**NORTH BRIDGEWATER** is the most populous of the 4 townships, and the first of the 3 which sprang from old Bridgewater. It is about 20 miles S. E. of Boston, is watered by Salisbury river, has a good soil, adapted to grazing, and contains 3

Congregational, 1 Swedenborgian, 1 Baptist, and 2 Methodist churches, 1 academy, 2 grammar and 17 other schools, 1 bank, 1 savings bank, 1 newspaper office, 3 grist mills, 2 saw mills, and manufactories of boots, shoes, hats, brushes, cabinet and wooden wares, forks, hoes, and shoemakers' tools. Pop. in 1855, 5,205.—**WEST BRIDGEWATER**, is about 25 miles S. E. of Boston, and like the preceding township, is on the Fall river railroad. A branch of Taunton river flows through it, affording motive power to several mills and factories. Boots and shoes, ploughs, shovels, hoes, forks, and iron castings, are the principal articles made. There are 10 schools, 1 Congregational church, 1 Swedenborgian, 1 Baptist, 1 Methodist, and 1 Universalist. Pop. in 1855, 1,784.

BRIDGEWATER, a seaport and parliamentary borough of England, county of Somerset, 151 miles from London by railway. It is a place of much antiquity, mentioned in "Domesday Book," by the name of Brugie. The river Parret admits vessels of 300 tons, and opens on the Bristol channel. The foreign trade is principally with the United States, the Canadas, the West Indies, and Russia. In 1853, the port owned 2 steamboats of 31 tons, and 122 vessels of an aggregate tonnage of 12,169. Entries of coasting vessels in 1852, 2,682; clearances, 1,170. Entries of vessels in the colonial and foreign trade, 58; clearances, 15. Brick and tile making is carried on in the neighborhood—the making of white brick, known as Bath brick, constituting a staple trade of the town. The parish church, which has recently been restored, is a fine structure. There are places of worship for Unitarians, Quakers, Independents, Methodists, and Baptists; also various schools and charitable institutions. The place has much historical interest, both in its remote antiquity and in modern times. In its neighborhood is the isle of Athelney, a marsh or swamp, in which Alfred took refuge from the Danes. At the conquest, many Saxons were settled here. It was a place of importance in the various civil wars of England, and attained an unfortunate celebrity from the part taken by its inhabitants in the Monmouth rising, and the terrible retaliation taken upon them by James II. and his adherents. The borough is governed by 6 aldermen and 18 councillors, one of whom is mayor, and returns 2 members to parliament. Robert Blake, the famous admiral, was a native of Bridgewater. Pop. in 1851, 10,817. Pop. of Bridgewater poor-law unions, which contain 40 parishes and townships, and an area of 85,539 acres, 83,477.

BRIDGEWATER, **FRANCIS EGERTON**, duke of, one of the English worthies, born in 1786, died March 8, 1808. Sir Egerton Brydges, who claimed to be the head of the senior branch, traced the descent of this great family from Charlemagne. The subject of this article was son of Scroop, 4th earl, and 1st duke of Bridgewater. In youth he was so delicate of constitution, that all care of his education was abandoned, but he outlived the tendency to

consumption, and his natural vigor of mind enabled him to make up for his educational deficiencies. He was the owner of immense estates, among which were the coal mines of Worsley; and the difficulty of conveying his coals to Manchester incessantly occupying his mind, the duke hit on a plan of a navigable canal. The great canal of Languedoc, in France, and the numerous canals of the Netherlands, deprived this idea of the merit of novelty; but in Great Britain it was the first great work of the kind. The duke having accidentally met with Brindley, the engineer, the work was begun, and in spite of opposition, both in and out of the legislature, was carried to a successful termination. The consequences were immediate benefit both to the duke, as owner of this magnificent property, and to the consumers, for it at once reduced the price of coals in Manchester 50 per cent. By various extensions, the duke opened a canal navigation between the Trent and the Mersey. These undertakings, executed by a single individual, and of perfect novelty, were stupendous at the time.

BRIDGEWATER, **FRANCIS HENRY EGERTON**, earl of, born Nov. 11, 1756, died in Paris, April 11, 1826. He was the youngest son of Henry Egerton, bishop of Durham, son of John, 3d earl of Bridgewater, whose direct ancestor was Sir Thomas Egerton, lord chancellor of England, created Viscount Brackley and baron of Ellesmere, by James I. He graduated at Oxford in 1780, in which year his father appointed him a prebendary of Durham. His relative, the last duke of Bridgewater, presented him to valuable rectories in Shropshire in 1781 and 1797. His brother John succeeded to the earldom on the extinction of the dukedom of Bridgewater in 1808. Twenty years later, Mr. Egerton himself became 8th and last earl, dying a bachelor. He resided during the latter part of his life in Paris, where he was distinguished for his eccentricities. His house was nearly filled with cats and dogs; out of 15 dogs, 2 were admitted to his table, and 6, dressed up like himself, were frequently seen alone in his carriage, drawn by 4 horses, and attended by 2 footmen. He had no ordinary share of learning and ability. His own publications are a splendid edition of the "Hippolytus" of Euripides, with scholia, notes, various readings, and a Latin version; a "Life of Lord Chancellor Egerton;" a "Letter to the Parisians on Inland Navigation;" and "Aneodotes" of his own family. He bequeathed his manuscripts and autograph letters to the British museum, with £12,000, the interest of which was to be expended in taking care of and increasing them. Further, by his will, dated Feb. 25, 1825, he left £8,000 to the president of the royal society, with a request that it should be given to some person or persons named by him, who should write, print, and publish 1,000 copies of a work "On the Power, Wisdom, and Goodness of God, as manifested in the Creation." Mr. Davies Gilbert, who occupied the chair of the royal society when the

earl died, consulted with Dr. Howley, archbishop of Canterbury, and Dr. Blomfield, bishop of London, and it was agreed that 8 treatises, devoted to the illustration of separate branches of the subject, should be written. Thus originated the "Bridgewater Treatises," whose appointed authors were Thomas Chalmers, D. D.; John Kidd, M. D.; William Whewell, D. D.; Sir Charles Bell; Peter Mark Roget, M. D.; William Buckland, D. D.; the Rev. William Kirby, and William Prout, M. D. These works have had a large and continuous sale; and, by the terms of the bequest, the profits of the treatises are appropriated to their respective authors. The earl's immense property, about £100,000 a year, in the first instance, came into possession of his kinsman, the late duke of Sutherland. On his death in 1833, it devolved upon the duke's 2d son, Lord Francis Leveson Gower, who then took the name and arms of Egerton only, and was created Viscount Brackley and earl of Ellesmere, in 1846.

BRIDGMAN, LAURA, a blind deaf mute, born at Hanover, N. H., Dec. 21, 1829. Up to the age of 2 years she possessed all her faculties, but a severe illness at that time occasioned the loss of sight and hearing, and consequently of speech, while the sense of smell was also destroyed, and that of taste greatly impaired. She recovered her health gradually, but none of her lost senses were restored. At the age of 8 she became an inmate of the Perkins institution for the blind in Boston, then as now under the care of Dr. S. G. Howe, and soon acquired such a familiarity with the building and its various apartments that she could wander at will through it unattended. Dr. Howe resolved to undertake at once the task of instructing her, a work of great difficulty, and one which, until that time, had never been attempted with success. The first step was to teach her the names of objects; for this purpose, an object with which she was familiar, such as a fork or spoon, was put in her hands, and with it its name in raised letters. This was repeated many times and with different objects, till she had learned that the word bore some relation to the object. As yet, however, her idea of this relation was very vague. The next step was to present her the separate letters in relief, at first so arranged as to form the name of an object which she knew. Finding that she recognized the word, her teacher disarranged the letters, and taking her hands in his own proceeded to reconstruct the word, causing her to observe each letter which composed it; having done this several times, she constructed the word herself without assistance. The same process was then repeated with other words, and before the close of her lesson, the idea had evidently dawned upon her mind that this was a means by which she could communicate her own thoughts to others. This process was continued until she had become familiar with a considerable number of words. She was then furnished with type having the letters in relief, and a board which had been

pierced with holes for the reception of the type. Objects known to her were then presented, and she would compose the names with the type. This afforded her great delight. She was next taught the manual alphabet, which she acquired very readily. This having been attained, her teacher presented her with an object with which she was not familiar, and left her for a time to inform herself concerning its form and use. The teacher then spelled its name with the manual alphabet, the child following each letter till she had comprehended that it was the name of the object, when she herself spelled it with the manual alphabet, then composed it with her types, and finally, as if to make assurance doubly sure, placed the word thus composed by the side of the object. All this was accomplished in the first 3 months. The same course, together with some lessons on the physical relations of objects, was continued through the year. Laura never wearied of this instruction, but when left to herself was constantly spelling words either with her type or the manual alphabet.—After she had been a year and a half at the asylum, her mother came to visit her. Laura encountered her when running, and endeavored to ascertain by touching her face and clothing whether it was any one with whom she was familiar, but failing to recognize her returned to her play. Her mother attempted to gain her attention, but she repulsed her, and returned to her young companions. Her mother next put a string of beads upon her neck, which she had been accustomed to wear when at home. She was pleased with them, but took no interest in the giver. Another object connected with her early home was put into her hands, and evidently excited her attention. She examined anew the person who had given her the articles, and intimated to Dr. Howe that this person had come from Hanover, but she still failed to recognize her mother. The anguish of the poor woman was extreme; she felt that her daughter was lost to her. At this juncture a vague idea seemed to pass through the mind of the child; she seized once more her mother's hands and examined them carefully, her countenance bearing marks of agitation. Unable longer to bear this trying suspense, the mother seized her and clasped her to her bosom; the child no longer doubted; she recognized her parent, and could not be withdrawn from her arms. Her youthful playmates endeavored in vain to entice her away; she had found her mother.—Her instruction was confined for the first 2 years to the names of objects; the attempt was then made to instruct her in their qualities, and subsequently in their relations to each other. There were many difficulties connected with each step, but patience and perseverance overcame them all. She was next taught to write, and her first effort was to write a letter unassisted to her mother. She subsequently acquired the rudiments of arithmetic; took lessons on the piano, on which she became quite a skilful performer; acquired a

practical knowledge of needlework, and of some household duties. Nor were her attainments like those of a parrot; the ideas she acquired were constantly the subjects of thought and inquiry. She one day addressed to Dr. Howe this question: "Man has made houses and vessels, but who made the land and the sea?" The answer that it was God who made all things, and the explanation of his character, affected her deeply. She sought to know more of this wonderful being, and did not rest satisfied till her teachers had explained to her the greath truths of revelation. The fear of death, which had formerly distressed her, passed away with the entrance of the hope of a resurrection; and she looks forward with joy to that change of existence when her physical infirmities shall be removed, and her faculties, all perfect, shall be occupied in praising her Creator.—In deportment Laura is modest almost to diffidence, and manifests in a remarkable degree that maidenly coyness and reserve which have been so often regarded as the result of education. She possesses a decided love of system and neatness, never leaving her room or drawers in disorder, and exhibiting great solicitude for propriety and taste in the arrangement of her dress. She exhibits a marked regard for the rights of others, and is at the same time jealously mindful of her own. Laura is now (1858) in her 29th year, and is still a resident at the Perkins asylum. She has named her room "the sunny home."

BRIDLE, the instrument by which a horse is governed and guided, consisting of a metallic bit which enters the mouth, a head-stall or strap of leather passing over the head and firmly holding the bit in position, and reins extending from the bit to the hand of the rider. The ancients ascribed the invention of the bridle to Neptune, the creator also of the horse. Some of the ancient nations, as the Numidians, and a part of the Romans, trained themselves to ride at full speed without bridles. The soldiers on Trajan's column are thus represented.

BRIDLINGTON, formerly written **BRELLINGTON**, usually called **BURLINGTON**, a parish of the east riding of Yorkshire, England, on the railway from Hull to Scarborough. It includes the market towns of Bridlington and Bridlington Quay, and in 1851 had a population of 2,482. The town of Bridlington is built chiefly along one narrow street, and contains the remains of a priory built in the 13th or 14th century, and now used for the parochial church. It gives the title of earl to the Cavendish family.—**BRIDLINGTON QUAY** is situated on a fine bay about 1 mile from the former town, and is much resorted to in summer for bathing. It has a good harbor, formed of 2 handsome piers, and an active export trade in corn. Paul Jones captured here the convoy of the Baltic fleet, Sept. 21, 1779.

BRIE (anc. *Brigensis pagus*, or *tractus*), a former province of France, lying between the Seine and the Marne, and now contained in the departments of Aisne, Aube, Marne, Seine-et-

Marne, and Seine-et-Oise. It was divided into Brie Française, which belonged to the government of Ile de France, and Brie Champenoise, which was divided into upper and lower Brie, and comprised in the government of Champagne. A third division once existed, called Brie Poilleuse; this was afterward incorporated with Brie Champenoise. The latter was the largest of the divisions, and had for its capital Meaux, the most important town in the whole province. Its chief wealth was in vineyards and pastures; and its butter and cheese acquired and still retain a wide celebrity. Brie Française produced grain in great abundance, and was likewise a good grazing country. Its capital was Brie-Comte-Robert. Corbeil, one of its principal towns, was an independent earldom from 946 to 1122, when it was taken from the famous Count Hugh du Puiset by Louis the Fat, and confiscated. In ancient times this province was partly covered by a vast forest, portions of which are still to be seen. It is believed by some to be the much disputed country of the Meldi, of whom Cæsar makes passing mention. It was subjugated by the Franks, who annexed it to the kingdom of Neustria. In the 9th century it was ruled by its own counts, who took their title from Meaux, but are also styled counts of Brie. Herbert of Vermandois, one of these feudal lords, having obtained the earldom of Troyes or Champagne, in 968 united the 2 provinces, which thenceforth shared the same fortunes. Both passed into the possession of the crown in 1361.

BRIEF (Lat. *brevis*, short). This term has had a threefold signification: 1. *Breve* in Latin, and *bref* in French, was a writ issuing out of any court in the name of the king; and though more strictly the name of the original writ by which a suit was commenced, it was afterward applied to all judicial writs. The reason of the name, as explained by Bracton (which, however, was only in reference to the original writ), was that it *briefly* set forth the subject matter of the action and the claim of the plaintiff. 2. In ecclesiastical law, a pontifical letter addressed to inferior ecclesiastics or to temporal princes upon some matter of discipline or claim of the church, was called an apostolical brief. This designation may have been used as expressing the concise form of the brief as compared with the more ample phraseology of the pope's bull. A similar use of the term was made in respect to a letter from the king in reference to ecclesiastical matters. Indeed, from the style of the brief, which usually commenced with the form of the Roman epistle, it was called a letter, and this is the source of the modern German word *Brief*. 3. The more common signification of the term at the present day is a summary of a case made out for the use of counsel, containing an abstract of the pleadings, a statement of the facts that can be proved, and a list of witnesses with a specification of what each can testify to. In England this is prepared by the attorney. In this country

counsel oftener make up their own brief, and the word is used as well for the heads of a law argument as for such an abstract as before mentioned preparatory to the trial of a cause.

BRIEG, a town of Prussian Silesia, the capital of a circle of the same name, situated on the left bank of the Oder, 28 miles S. E. of Breslau. It contains a castle, the residence of the old counts of Brieg, 5 churches, a synagogue, a lunatic asylum, a gymnasium, and an arsenal. Its fortifications were destroyed by the French in 1807. A great fire desolated the town May 26, 1852.—Its principal trade is in cloths, tobacco, and starch, and its cattle-fairs are the most important in the province. The upper Silesian railway from Breslau to Oracow passes here. Pop. 18,000.

BRIEL, or **BEIELLE**, a small but strongly fortified town of Holland, province of South Holland, on the island of Voorne, and commanding the entrance to the Meuse. It is famous in history as the first town which the Dutch wrested from the Spaniards (1572), and as the birthplace of Van Tromp.

BRIENNE, the name of an ancient French family which traces its origin to a count of Brienne, a contemporary of Hugh Capet, and which counted among its members an emperor of Constantinople, a king of Jerusalem and Sicily, several dukes of Athens, 3 constables of France, and many valiant knights and stately dignitaries. The title of Brienne became extinct in 1856, reverting to the families of the Confians and the De Loménies.

BRIENNE, ÉTIENNE LOUIS DE LOMÉNIÉ DE, a French cardinal and statesman, born in Paris in 1727, died Feb. 14, 1794. He was promoted to the bishopric of Condom in 1760, and 3 years later to the archbishopric of Toulouse. Although not a writer, he had such reputation as a wit that he was elected in 1770 a member of the French academy. To please his friends, the philosophers, he actively participated in the suppression of convents, but managed at the same time to be invested with the wealthiest abbeys. In 1787 he was made comptroller of finances, and in 1788 he was premier. In a few months his reputation had vanished, and he was dismissed; the king, however, caused the pope to make him a cardinal. In 1794 he was arrested by the revolutionists, who treated him with such brutality that the same night he died of apoplexy.

BRIENNE-LE-CHÂTEAU, a small French town, in the department of Aube; pop. 1,950. The military college of Brienne, which was suppressed in 1790, was attended by Napoleon from April 23, 1779, to Oct. 17, 1784. Thirty years later, Jan. 29, 1814, Napoleon attempted here the manoeuvre of cutting the Silesian army in two, by marching suddenly from Chalons, and interposing his forces between Schwartzberg and Blücher, so as to prevent their junction. The town is named after the chateau built by the minister Louis de Loménie, last count of Brienne. This chateau was the head-quarters of Blücher, who escaped by leading the horse down the stairs.

Almost at the same spot and at the same time Napoleon had a hair-breadth escape from the attack of a Cosack by the prompt assistance of Gourgaud. Napoleon took up his residence in the same chateau, and by his will he left \$300,000 to the town.

BRIENZ LAKE or, a lake in the south-eastern part of the canton of Bern, Switzerland, formed by the expansion of the river Aar. It is connected by steamboat with the Lake of Thun, is about 8 miles long and 2 miles broad, and is embosomed in mountains, some of which, on the south, project in high promontories into the lake. Cascades from these mountains are abundant, the principal of which is the Giesbach, and form an interesting feature in the natural scenery of the lake. Its surface is about 1,700 feet above the sea-level. In the river Aar, near this lake and to the east of it, are the falls of Reichenbach and Alpbach—the former celebrated for its cascade of 2,000 feet in height, and the latter for its triple iris in the morning sun. The lake produces a small species of fish (*gadus mustela*), which enjoy a high reputation. The village of Brienz is at the east end of the lake, near the entrance of the Aar. A small steamer runs daily in one hour between Brienz and Interlachen, touching at Giesbach.

BRIER CREEK, a small stream rising in Warren co., Ga., flowing S. E. for about 100 miles, and entering the Savannah river, a few miles E. of Jacksonborough. It is noted for a battle during the revolutionary war. After the American victory on Kettle creek, in Feb. 1773, Gen. Ashe was sent by Lincoln at the head of about 1,200 continental troops to drive the British from Augusta. The latter, under the command of Gen. Campbell, evacuated the city, retreated to Brier creek, and after crossing destroyed the bridge. Ashe pursued them, arrived at the creek Feb. 27, and while halting to form a camp was surprised by the intelligence that 1,800 British under Gen. Prevost had crossed the stream 15 miles above, made a wide circuit, and were now (March 3) rapidly advancing upon his rear. The Americans were totally unprepared for battle, but retreat was impossible. The bridge had not yet been repaired, and skirting the banks was a deep swamp 3 miles wide. The troops were hastily called to arms, and as the British advanced opened upon them a heavy fire, but an unfortunate movement in their line gave the enemy an advantage which decided the fortune of the day. The continentals were put to flight—some before firing a shot, others after a gallant resistance. Many were drowned in trying to swim across the Savannah, or were lost in the swamps. Their total loss was about 150 killed, and 189 made prisoners, beside all their baggage, 7 pieces of cannon, about 500 stand of arms and much ammunition. The British had only 5 killed and 11 wounded, and were enabled by this victory to reoccupy Augusta and open a free communication with the Indians and Tories in Florida, western Georgia, and the Carolinas.

BRIG (from *Brigantine*, a kind of undecked vessel), a decked vessel with 2 masts, square-rigged, nearly like the mainmast and foremast of a ship.

BRIGADE, in the English and continental armies, an indeterminate number of troops, either of cavalry or militia, commanded by a brigadier. A brigade of horse is generally composed of from 8 to 12 squadrons, and a brigade of infantry of 8 regiments. In the U. S. army, 2 regiments of infantry or cavalry constitute a brigade, which is commanded by a brigadier-general.

BRIGANDINE, in the defensive armor of the middle ages, a coat of mail consisting of thin scales of plate, pliant and easy to the body of the knight or sergeant who wore it.

BRIGANTINE (usually derived from *brigand*), a flat open vessel with 10 or 15 oars in a side, built to carry sail also, and upward of 100 men. They were formerly much used in the Mediterranean and the waters of the south of Europe for purposes of brigandage or piracy; hence their name. Speed was a main object in their build.

BRIGGS, CHARLES FREDERICK, an American author and journalist, born on the island of Nantucket. Early in life he removed to the city of New York, where he has resided since, with the exception of about 5 years passed in foreign travel. Adopting journalism as the business of his life, Mr. Briggs has been the editor of several periodicals, and a constant contributor to others. In 1830 he published a novel, entitled, "The Adventures of Harry Franco, a Tale of the great Panic," which evinced a fine descriptive and satirical talent. Four years later, his "Haunted Merchant" appeared, and in 1847, "The Trippings of Tom Pepper, or the Results of Romancing," a most diverting work, but in which the author is supposed, under various disguises of name, to have made free use of the characters of his friends. None of these works, however, have been published under Mr. Briggs's name. In 1845 he was associated with the late Edgar A. Poe in the conduct of the "Broadway Journal," a weekly paper of great spirit. He was also an editor of "Putnam's Magazine," from 1853 to 1856, in connection with George William Curtis and Parke Godwin; but as Mr. Briggs had the principal share of the management, it is but just to ascribe to his tact and energy the high reputation which that periodical soon attained. He is now one of the editors of the "New York Times," a daily paper of high standing and influence. Mr. Briggs is a writer of great acuteness and vigor, the master of a caustic wit, and having a nice perception of the peculiarities of human character.

BRIGGS, HENRY, an English mathematician, born in 1556, died Jan. 26, 1630. In 1596 he was appointed professor of geometry in Gresham college, and in 1619 Savilian professor at Oxford. In 1616 and 1617 he visited Napier at Edinburgh, and induced him to make that change in his

recently invented system of logarithms which has made logarithms the most practically useful invention of that age. The remainder of his life was principally given to the preparation of logarithmic and trigonometric tables, the foundation of all the tables which have been published since.

BRIGGS, HENRY PERBONET, an English painter, born in 1798, died in London, Jan. 1844. He first exhibited portraits in the royal academy in 1814, and in 1818 appeared as a historical painter. His best known works are "Othello relating his Adventures to Desdemona," and the "First Interview between the Spaniards and Peruvians."

BRIGGS, WILLIAM, English physician, born at Norwich about 1650, died at Town Malling, in Kent, Sept. 4, 1704. In 1676 he published his "Ophthalmographia," and soon after was created M. D. at Cambridge. In 1682 his "Theory of Vision" was published, and in 1685, by the desire of Sir Isaac Newton, with whom he was intimate, he produced a Latin version of this treatise, with a preface by Newton.

BRIGHAM, AMARIAH, M. D., physician and superintendent of asylums for the insane, born at New Marlborough, Berkshire co., Mass., Dec. 26, 1798, died Sept. 8, 1849. Left an orphan at the age of 11, with but limited means, the boy was taken into the family of his uncle, a physician at Schoharie, N. Y., who died some 8 years later. He was now 14 years old, and starting for Albany, he found a situation as clerk in a bookstore. He availed himself of every opportunity of acquiring knowledge. At the age of 17 he repaired to New Marlborough, and commenced the study of medicine, supporting himself by teaching school during the winters. He devoted from 12 to 16 hours a day to study. Commencing practice in 1821, he resided successively in Enfield and Greenfield, Mass., and in Hartford, Conn., and spent a year in European travel and study. In 1837 he delivered a course of lectures before the college of physicians and surgeons at New York. In 1840 he was appointed superintendent of the retreat for the insane at Hartford. In 1842 he was appointed to the same office in the N. Y. state lunatic asylum, at Utica, N. Y., the largest and most complete institution of the kind yet established in this country, and he entered upon his duties in the winter of 1843. Here he had the personal care and supervision of 450 or 500 patients, beside which he delivered popular lectures on the treatment of the insane, prepared his reports with great care, and established a "Journal of Insanity." His health began to fail, and the loss of his only son, a promising youth of 12 years, in August, 1843, aided the inroads of disease, from which he died. He published in 1832 a small work on "Asiatic Cholera," and soon after, a treatise on "Mental Cultivation and Excitement;" in 1836 appeared "The Influence of Religion upon the Health and Physical Welfare of Mankind;" in 1840 he produced the "Anatomy, Physiology, and Pa-

thology of the Brain;" in 1849, he published a small volume of aphorisms and maxims for the use of those who had been under his care, under the title of the "Asylum Souvenir."

BRIGHT, JOHN, an English politician, born in 1811, son of Mr. John Bright, of Greenbank, near Rochdale, Lancashire, and a partner in the firm of John Bright and Brothers, cotton-spinners and manufacturers in that town. When the anti-corn-law league was established in 1838, Mr. Bright took an active part in its proceedings, and, both as a speaker and writer, assisted in vindicating the principles on which it was based. He soon occupied a leading position in this body, second only to Mr. Cobden. He was active in organizing the bazaars held in aid of the league in Manchester and in London. In April, 1843, he unsuccessfully contested the parliamentary representation of the city of Durham. In the July following another vacancy occurred, and he was elected. He took part with energy and eloquence in the exciting discussions, from 1843 to 1845, on free trade, and divides with C. P. Villiers, Richard Cobden, and Gen. Thompson (author of the "Catechism of the Corn Laws"), the honor of having induced Sir Robert Peel to favor free trade in corn. The heavy expenses of his election contests at Durham were understood to have been defrayed by the league, through whose influence he was returned for Manchester in 1847, and again in 1852. A member of the society of Friends, whose principle is peace, he strenuously condemned the policy of the war with Russia, and, as a leading member of the peace society, sanctioned the sending of a deputation, which, in February, 1854, waited on the emperor Nicholas, at St. Petersburg, with the design of dissuading him from war. Mr. Bright's opinions on this subject were much at variance with those of many of his constituents at Manchester. Ill health compelled him to be absent from parliament in the early session of 1857, and when, on the defeat of the Palmerston administration in March, by the adoption of Mr. Cobden's motion condemning the war with China, a general election was determined upon, Mr. Bright's Manchester friends resolved to adopt him again as a candidate, in his absence. In July, 1852, Mr. Bright had been elected by a majority of more than 1,100 over his next competitor; in March, 1857, he stood lowest on the poll, and received nearly 8,000 fewer votes than one, and nearly 2,300 less than the other of his successful opponents—gentlemen holding much the same general political opinions as himself, but differing from his views of the China question. He was subsequently, however, returned for a vacancy at Birmingham, and though not fully restored to health, was in his place during the memorable proceedings of parliament in the spring of 1858, and took a prominent part in the overthrow of the Palmerston cabinet. In April, 1858, he delivered a speech on the budget, advocating a reduction of the military establishment, and condemning the policy of Asiatic

conquest. Mr. Bright has been twice married, and his second wife is living.

BRIGHTON, a town in Middlesex co., Mass., 4 miles W. of Boston, pop. 2,895. It contains the principal cattle market of New England.

BRIGHTON, (formerly BRIGHTHELMSTON), a sea-side watering place in England, in the county of Sussex, on the English channel, 51 miles S. of London, by the London, Brighton, and South Coast railway. Steamboats ply regularly between Brighton and Dieppe, on the French coast, and it has hourly communication by steamboat with Liverpool. It extends for more than 8 miles along the coast from Kemptown on the east to Hove on the west. The eastern half of the town stands on the ridge of high chalk cliffs which stretch away to Beachy Head; the western half is seated on a low pebbly beach, and is sheltered by Seaside Bill. The whole of this frontage is occupied by a range of first-class houses and hotels. It was created a parliamentary borough by the reform bill of 1832, and returns 2 members to the house of commons. It has lately become an incorporated city. Its resident population in 1851 was 69,569, dwelling in 10,843 houses. The population has increased with rapid strides. In 1801, it was 7,389; in 1811, 12,012; in 1821, 24,439; in 1831, 40,684; in 1841, 46,661. During the season the city accommodates nearly 80,000 persons. The foundation of its prosperity was chiefly laid in the middle of the 18th century, by Richard Russell, a distinguished physician, whose work on the use of sea water attracted much public attention. Its celebrity as a fashionable watering place was due to the prince of Wales, afterward George IV., who made it his place of residence, and commenced in 1784 the erection of the pavilion, which was completed 8 years afterward. The town has lately purchased it from the crown for the sum of £58,000, and thrown it and the pleasure grounds attached to it open to the public. The chain pier was erected by a joint stock company in 1822-'23, at an expense of £30,000. A small charge is made for admittance to the pier, which is 1,184 feet in length, and extends into the sea 1,084 feet. The east side of Brighton is protected by a sea wall. It is 60 feet high and 2½ feet thick at the base, and cost the town £100,000. In the western quarter of the town is a battery, consisting of 6 42-pounders, erected in 1793. On the eastern side is the queen's park, and on the western a chalybeate spring. There are 15 churches and chapels belonging to the established church, and 21 other places of religious worship, including a synagogue. The air of Brighton is so bracing, and its sea-bathing so famous, that it is a peculiarly eligible place for schools, of which there are about 200. The Brighton college, a proprietary school for sons of the middle classes, was founded in 1847, and aims to give a more modern curriculum of studies than is followed at Eton or Harrow or Winchester. The benevolent institutions of Brighton are almost as numerous as its schools. Foremost stands the Sussex county

hospital, established in 1838, and since thrice enlarged. It is open to the "sick and lame poor of every county and nation." The town hall is a large building. Fairs are held north of the town on Holy Thursday and Sept. 4. There are 2 theatres, an assembly room, and 2 club-houses. The literary societies are the royal Brighton scientific and literary institution, the Brighton Athenæum, and the Brighton workingmen's institute. It has a race course, where annual races are held. Regattas are occasionally given. There is every species of bathing establishments, and a good supply of fresh water and gas. The hotels are probably the most extensive in the British islands. The only manufacture is that of wooden wares. The coast of Brighton is too inhospitable to allow of much direct trade to this port, and the coasting and foreign trade is transacted at Shorehåm, 7 miles to the W. There are about 100 fishing boats, manned by 500 men. Mackerel, herrings, soles, brill, and turbot most abound; mullet and whiting are also met with. Beside the direct line of railway to London, there is a line running E. to Hastings. Before the railway was opened, the London and Brighton coaches were famous for their speed and number; 82 passed to and fro daily. After the erection of the chain pier, Brighton became a steam-packet station for passengers who preferred to reach Paris *via* Dieppe and Rouen instead of *via* Dover and Calais. Since the South-Eastern railway Folkestone and Boulogne line has come into operation, the Brighton and Dieppe line has languished. There are fine drives in the vicinity.—We hear first of BRIGHTHELMSTONE in Domesday Book. It has frequently suffered from hostile invasion. The French plundered and burnt it in 1618. During the reigns of Henry VIII. and Elizabeth fortifications were erected to protect it. In the 17th century it contained 600 families, mostly engaged in fishing. Charles II. escaped from Brighton in a coal-brig for France, after the battle of Worcester, 1651.

BRIGIDA, BRIGIDET, or BIRGIT, SAINT, a Swedish lady, born 1302, died in Rome, July 23, 1373. She is thought to have been the daughter of Birgir, prince of the royal blood of Sweden, and of Ingeburgis, a descendant of the Gothic kings. She lost her mother at a tender age, and was left to the care of an aunt, who brought her up religiously, and laid the foundation of the virtues for which she was afterward so distinguished. At the age of 16 she was given in marriage to Ulpho, or Ulf Gudmarson, prince of Nericia, with whom she passed many years of uninterrupted happiness, giving birth to 4 sons and 4 daughters, the youngest of whom is honored in the Roman calendar by the name of St. Oatharine of Sweden. Before the birth of these children the parents had enrolled themselves in the third order of St. Francis, the rules of which are adapted to the state of matrimony. They now added to their previous obligations a vow of continence, and resolved to devote themselves to works of benevolence. They built a charity

hospital which they served in person, and Ulpho abandoned the court, and resigned his seat at the king's councils. They next made a pilgrimage to Santiago de Compostella, on returning from which Ulpho resolved to enter the Cistercian monastery of Alvastre. He died in 1344, either during his noviceship or soon after his profession. Brigida now divided the estate among her children and built a large monastery at Wastein, in which she placed 25 monks and 60 nuns, prescribing for them the rule of St. Augustine. Here she spent 2 years in close seclusion, and then set out for Rome. After founding in that city an asylum for pilgrims and Swedish students, she went to Jerusalem, visited the holy places, and then returned to Rome, where she died in the course of the following year. She was distinguished for love of retirement, modesty of demeanor, fervor of devotion, compassion for the poor, austerity toward herself, and gentleness toward others. She was canonized by Boniface IX. in 1391, and Oct. 8 was appointed as her festival. At the request of the clergy and nobility of Sweden, the facts relating to her enrollment among the saints were reexamined by the council of Constance, and the bull of her canonization confirmed, in 1415. A bull to the same effect was issued by Martin V. in 1419. In the church of Rome St. Brigida is best known by her revelations, chiefly concerning the passion of Jesus Christ, and events which were to happen in certain kingdoms. They are believed by Catholics to have been communicated to her from on high, and were written after her narration partly by her confessor Peter, a Swedish Cistercian monk, partly by a Spaniard, called Alfonso the hermit. The learned Gerson attacked them with great severity; but the council of Basel gave them its approbation after they had been thoroughly examined by John of Turrecremata. Among her other works are a discourse in praise of the blessed Virgin, and a series of prayers on the sufferings and love of Christ, part of which may be found in modern books of devotion.

BRIGITTINS, or ORDER OF OUR SAVIOUR, a branch of the Augustinians, founded about the year 1844 by St. Brigida of Sweden, and approved by Urban V. in 1370. It owes its origin to the monastery built by Brigida at Wastein, near Linköping, in Sweden. It embraces both monks and nuns, who occupy contiguous buildings, and celebrate the divine office in the same church, but an inviolable enclosure separates their respective apartments, and their places in the church are so arranged, the men being below and the women above, that one sex can never see the other. The prioress is superior in temporal concerns, but spiritual matters are managed by the monks. All the houses of the order are subject to the bishop of the diocese, and no new one can be founded without express permission of the pope. The number of male religious in each monastery was fixed by the rule at 25, and that of females at 60; but this regulation has ceased to be strictly enforced, and,

indeed, there are few establishments for both sexes now existing, though some are yet maintained in Germany, Flanders, and other countries; most of them, including the parent house at Wastein, were destroyed at the reformation. There are 2 rich convents of Brigittins at Genoa, into one of which only ladies of high family are admitted. The only house of the order in England was the rich institution known as Sion house, founded by Henry V. on the Thames, 10 miles from London. It was one of the first suppressed by Henry VIII. After passing through the hands of the dukes of Somerset and Northumberland, it was restored to the religious by Queen Mary, and again dissolved under Elizabeth. The nuns then left England, and after various troubles established themselves in Portugal.

BRIGNOLE, a noble family of Genoa. Three of its members were doges of the republic in the 17th and 18th centuries, and gave the name to the *Palazzo Brignole Sala*, in the *Strada Nuova*, which contains the best private collection of pictures in Genoa, and which is commonly called *Palazzo Rosso*, from the red color of the marble.

BRIGNOLES, a French town, department of Var (Provence), on the Calami. It is well built, and contains several squares planted and adorned with fountains, a public library, a normal school, and manufactories of silk, cloth, hardware, soaps, and of other articles. A good trade is carried on in wines, olive oil, liquors, and dried fruits; the prunes of Brignoles, which are produced in the country around Dignes, enjoy a high reputation. Pop. 5,372.

BRIHUEGA, an old and once walled town of Spain in the province of Guadalajara, on the Tajuna. It was the scene of a decisive victory gained by the French, under the duke de Vendôme, over the allied forces under Lord Stanhope, 1710. The French, under Gen. Hugo, fortified the town, and took up their quarters here, Sept. 14, 1810. A branch establishment of the royal cloth manufactory of Guadalajara occupies a splendid edifice built under the reigns of Ferdinand VI. and Charles III. A considerable trade in cloth and woollen goods is carried on here. Pop. 5,147.

BRIL, PAUL, a Flemish painter, born at Antwerp in 1553, died in Rome in 1626. He aided his brother Matthew in decorating the Vatican, and by a careful study of Titian and the Caracci, acquired an admirable style, particularly in landscape painting. He executed some important works for the Sistine chapel, and other public buildings. Some of his landscapes contain figures by Annibale Caracci. His finest composition is a landscape in the Sala Clementina of the Vatican.

BRILLAT-SAVARIN, ANTHELME, a French author and magistrate, born at Bellay, April 1, 1755, died at Paris, Feb. 2, 1826. He was a deputy in the states general in 1789; fled to Switzerland and the United States to escape from the revolutionary tribunal; and on his

return to France in 1796, became a judge of the court of cassation. He is known to literature by his anonymous writings on political economy, and on the archaeology of the department of Ain, also by a work on duels; but chiefly by his famous book on gastronomy, entitled *Physiologie du goût*, published after his death by Richerand in 1825.

BRILLIANT, a fine diamond with a surface cut flat; below, it is angular, so as to refract the light, and have a glistening appearance.

BRILON, a town and circle of the Prussian province of Arnsberg, formerly part of the duchy of Westphalia. The circle has a rough, hilly surface of some 280 square miles in extent, and is mostly uncultivated, the chief productions being silver, copper, lead, iron, gypsum, calumite, and live stock. Pop. 37,600.—The town, on the road from Arnsberg to Cassel, is one of the oldest in Prussia, was in former times a Hanse town, stands on high ground near Mönne, and has manufactures of linen, tinware, and nails. It also contains a college, hospital, and a great parish church said to have been built by Charlemagne. Pop. 8,900.

BRIMSTONE. Sulphur, when melted and cast in moulds into the form of rolls, is sold under the name of roll-brimstone. See SULPHUR.

BRINDISI (anciently *Brundisium*), a fortified city and seaport of Naples, in the province of Otranto. It is in what was the ancient Calabria, in the Messapian peninsula, and stands on one of the bays of the Adriatic. It has an excellent harbor, and was the seat of an extensive commerce and communication with Greece. The Appia Via terminated at Brindisi. By some writers its foundation is ascribed to the Cretans, by others to Diomedes. It still has the ancient enclosure and fortifications, but its port was almost destroyed in the 15th century by an earthquake. The dramatic poet, Pacuvius, was born here, and here Virgil died. Here Sylla landed on his return from the Mithridatic war, and Cicero coming from exile; and here Cæsar besieged Pompey, and Antony threatened Octavius. Its south harbor is minutely described by Cæsar. In the convention held here to adjust the disputes between Antony and Augustus, Mæcenæ was accompanied by Horace: *Brundisium longa finis chartæque viæque*. Recent internal improvements, such as cutting away the isthmus or sandbar, which has for centuries been slowly forming across the inner harbor, have brought to light many of the works by which Cæsar fortified the city and protected the harbor. There still stands in the city an ancient pillar about 50 feet high, probably intended for a fire-beacon. Brindisi was a port of embarkation for the crusaders. It is now the see of a bishop, and has a public library, 2 hospitals, and divinity schools. The cathedral of the place is a building of some note, a Norman structure. A lighthouse was erected in 1843, and the harbor otherwise considerably improved. In May, 1845, it was

made an entrepot for foreign goods, with bonded warehouses. The population, which in ancient times was 60,000, has diminished to 6,500.

BRINDLEY, JAMES, an English mechanic, born in Derbyshire in 1716, died at Turnhurst, Sept. 27, 1772. He was apprenticed to a millwright at the age of 17, and quickly displayed his inventive genius in the improvements which he suggested in the manner of performing the work. After entering upon business on his own account, he devised in 1752 an improved water-engine for draining the coal mines at Clifton. The wheel of this engine was 30 feet below the surface, and was moved by water brought from a distance of 600 yards through a subterranean channel. He was engaged in 1755 to execute the larger wheels for a silk-mill at Congleton, and afterward finished the whole machinery in his own way. His reputation recommended him to the duke of Bridgewater, who had an estate at Worsley, 7 miles from Manchester, abounding in coal, which was rendered useless by the expense of land carriage. Brindley, being consulted, declared a canal from the estate across the river Irwell to Manchester practicable, and he constructed in the years 1760 and 1761 this immense water-course, the first of the kind in England, which had no locks, and was in some parts a subterraneous tunnel and in others an elevated aqueduct. It was carried over the Irwell in a lofty aqueduct 89 feet above the surface of the water. The success of this undertaking was such that within 50 years more than \$65,000,000 had been invested in Great Britain in similar canals, and the most important of these were designed and superintended by Brindley. He revived the idea of canal communication across the country by uniting the Mersey and Trent rivers, and after a survey undertook to tunnel the Harecastle hill, which had before been deemed an insurmountable obstacle. This tunnel is 2,260 yards in length, and 70 yards below the surface. It was begun in 1786, and finished after Brindley's death by his brother-in-law, Mr. Henshall, in 1777. He superintended the construction of the Coventry and Oxford canals, by means of which, together with the Mersey and Trent canal, he connected the Thames, Humber, Severn, and Mersey rivers, and united not only the most industrious districts of the country, but the great cities of London, Liverpool, Bristol and Hull. It was his custom when perplexed with any extraordinary difficulty to retire to bed, and lie there sometimes for 2 or 3 days till his plan was clear.

BRINE, the salt water naturally produced in many parts of the world beneath the surface of the earth, which is more or less saturated with chloride of sodium or common salt, and which flows out in springs or is pumped up for the use of the salt manufactories. It will be treated in detail in describing the preparation of salt under its proper head.—Brine is also the artificial

saline solution used for preserving meats. By a paper recently communicated to the imperial academy of medicine of France, it appears that brine thus used acquires poisonous properties in a few months, so that its use with food continued for some time may produce fatal effects. The symptoms are first noticed in the effect of the poison upon the nervous system. Tremblings, convulsions, and loss of sensation are caused. The secretions of the skin and kidneys are also increased, and violent congestion and inflammation of the intestines ensue. The council of health in Paris, after examining into this subject, recommend, that "in all cases brine preserved too long, or in contact with rancid meat, should not be employed, except with the greatest care, and after it has been purified by skimming all the scum which forms on the surface."

BRINKLEY, JOHN, an English astronomer, born at Woodbridge, in 1763, died at Cloyne, Ireland, 1885. He was selected in 1792 to be astronomer royal of Ireland, and Andrews professor of astronomy in Trinity college, Dublin; and in 1814 he discovered the parallax of the fixed stars. In 1827 he was made bishop of Cloyne.

BRINKMANN, CARL GUSTAF, baron, a Swedish diplomatist and poet, born near Stockholm, Feb. 24, 1764, died Jan. 10, 1848. After studying at Upsal he visited the universities of Halle, Leipsic, and Jena. He was ambassador to Paris in 1798, to the Prussian court in 1801, and to London in 1807. He became a member of the royal academy at Stockholm in 1829, was afterward ennobled, and at his death bequeathed his valuable library of 10,000 volumes to the university of Upsal. He was long in correspondence with Madame de Staël. His principal works are in 2 volumes, entitled "Poems," and "Philosophical Thoughts and Poems."

BRINVILLIERS, MARIE MARGUERITE D'AUBRAY, marchioness of, a notorious French woman, convicted of poisoning her father, her brothers, and a host of other persons, and executed at Paris, July 16, 1676. She was highly educated, and moved in the best French society, concealing under a gentle appearance the most atrocious propensities. Her father was Dreux d'Aubray, a prominent public officer of Paris. In 1651 she married the marquis of Brinvilliers. Shortly after the marriage, she fell desperately in love with one of his friends, Gaudin de Sainte Croix, an adventurer, said to be the illegitimate offspring of an illustrious family, a dashing and handsome young fellow. Her husband did not interfere, but her father caused the arrest of Gaudin, who was incarcerated in the bastille. There he met an Italian of the name of Exili, who taught him the preparation and application of a peculiar kind of poison. As soon as he recovered his liberty, he became the instructor of the marchioness, who initiated her husband into the secret. The latter had ruined himself by his extravagance, and the only way of replenishing his exchequer was through the

property of his wife's family. This, however, was not within his reach during their lifetime. Their death was resolved upon. He prepared the poison, and his wife experimented with it upon the sick in the Paris hospital, to whom she presented it in biscuits, upon her guests, to whom she offered it in pigeon-pies, and upon her chambermaid, to whom she administered it in a slice of ham. Of the persons who tasted it all did not die at once; the drug was not yet strong enough. Upon her father she made 8 unsuccessful experiments, and when she eventually succeeded, he was the last to suspect his loving daughter, who had overwhelmed him with marks of respect and affection. She next experimented successfully on her 2 brothers through the agency of Lachaussee, an old domestic of her lover, who for that particular purpose was attached to the brothers' household. Her husband was next doomed to perish, but he saved himself by taking an antidote. Her paramour died of the effects of the poison, while he was preparing it; a box was found in his house containing the poison, and her love letters, and other conclusive evidences of her crime, and she left Paris. Lachaussee, the man-servant whom she had hired to poison her brothers, put in a claim upon the effects of his former master, Sainte Croix, for wages due him. Madame de Villareaux, the widow of one of the poisoned brothers, had fixed her suspicions upon Lachaussee. He was arrested and sentenced to death. Before his death he made a full confession. This afforded the requisite legal evidence for the conviction of Madame Brinvilliers. She was condemned *in contumacia*, while at the same time a policeman was despatched to Liège, where she was concealed in a convent. He gained access to her cell under the garb of a priest, and to her confidence under the character of a lover. One evening he enticed her out of the town, where soldiers lay in ambush to seize her, while he took her papers, among which one was found intended to be read after her death, in which she confessed that she had set fire to a house, poisoned her father, her brothers, one of her children, and herself. This paper was put in as evidence at the trial. On her refusing to admit its truth, she was taken to the torture-room. This brought her to confess not only the crimes enumerated in the paper, but others, which the government withheld from public knowledge. Madame de Sévigné in her letters gives a graphic account of her execution. All Paris was on the spot; artists, like Le Brun, to take her portrait; her wretched husband to plead to the end in her favor; the policeman who had entrapped her at Liège; thousands of spectators of all classes, including the usual number of fashionable ladies eagerly looking on, who were rebuked by the criminal addressing them with "*Voilà un beau spectacle à voir.*" After her death the sneer with which she uttered these last words was still lingering upon her countenance. The ex-

citement did not altogether die out with her death. The poison she used was examined and proved to have been *agua tofana*.

BRION, Luis, admiral of Colombia, born at Curaçoa, July 6, 1782, died Sept. 20, 1821. He was sent at an early age to Holland to receive his education, his father being a native of that country; there he entered the Dutch army, and was offered a commission in 1799, but being recalled by his parents, he returned to Curaçoa. He however remained there but a short time; receiving permission from his parents, he visited the United States, where he studied navigation. Upon the death of his father, who bequeathed him a large fortune, he bought a vessel and made several voyages; entering into speculation on his own account, he was very successful, and returned to Curaçoa in 1804, where he established a mercantile house. The political events in Venezuela of 1808-'10 brought Brion rapidly into notice; he volunteered his services to the republic of Caracas, and in 1811 was appointed captain of a frigate. He now devoted all his resources and his energies to the patriotic cause. At his own expense he fitted out a fleet of vessels, and attacked the Spanish forces at the island of Marguerite, where he gained a signal victory. Brion distinguished himself at the conquest of Guiana, and also at Santa Marta and Cartagena. The latter part of his life was rendered unhappy by an unfortunate circumstance: during a residence at Savanilla he reduced the custom house duties; this coming to the ear of Bolivar, he directly countermanded the order, which so preyed upon the mind of Brion, that he became ill, and leaving the squadron returned to Curaçoa, and soon died in poverty.

BRIOUDE, a French town in the department of Haute Loire, capital of the arrondissement of the same name, situated near the left bank of the river Allier, on the site of the ancient town of Brivas. The old bridge at *La Vieille Brioude*, long celebrated as being the widest in span of any known, fell down in 1822. In the 16th century, many of the inhabitants of Brioude rose in favor of Lutheranism, but were afterward subdued by the Roman Catholic party. Lafayette was born here. A considerable traffic in grain, hemp, and wine is carried on here. Pop. of the arrondissement, in 1856, 81,448, and of the town 4,787.

BRISACH, or BREISACH, a circle in the grand duchy of Baden, province of the Upper Rhine, pop. 28,000, with a capital called Old Brisach, to distinguish it from the village on the opposite side of the Rhine, which belongs to France, and which is called New Brisach. Old Brisach has a population of 8,400, is well fortified, and was formerly the bulwark of Germany on the upper Rhine. It has a fine old cathedral, and the inhabitants are engaged in shipping and in the cultivation of tobacco.

BRISBANE, a north-eastern county of New South Wales, bordered on the S. by Hunter and Goulbourn rivers; area, 2,344 sq. m. It con-

sists chiefly of table-land, diversified by a few plains and some high peaks, one of which, called the Burning mountain, or Mount Wing-en, is in a state of combustion. The burning portion is from 1,400 to 1,500 feet above the level of the sea.—The capital of this county, also named Brisbane, is situated on the river Brisbane, 10 miles above its mouth in Moreton bay; pop. in 1856, 5,800. It was formerly a penal settlement, but ceased to be such in 1842, since which period it has increased largely in size, and improved in appearance. Its trade, which is rapidly augmenting, is principally in wool.

BRISSON, BARNABÉ, a French jurist, born in 1581, occupied the highest judicial, diplomatic, and parliamentary functions during the reign of Henry III., and compiled the *Code de Henri III.*; but having been appointed first president of the parliament by the members of the league during the siege of Paris by Henry IV., his conduct filled them with distrust, and they had him executed Nov. 15, 1591.—MATHURIN JACQUES, a French savant, born at Fontenay-le-Comte, April 30, 1733, died at Versailles, June 23, 1806. He was instructor to the children of the royal family of France in physics and natural history. He was also censor royal, member of the academy of sciences, and of the institute, and succeeded Nollet in the chair of natural philosophy at the college of Navarre. He translated Priestley's work on electricity, although he opposed his theories, and still more those of Franklin. The most able of his writings are on specific gravity and on ornithology. Buffon quotes frequently from the latter work.

BRISSOT, JEAN PIERRE, a Girondist leader, surnamed *DE WAEVILLE*, after the village of Ouarville, near Chartres, where he was born Jan. 14, 1754, died by the guillotine Oct. 30, 1793. He had abandoned the profession of the law for the pursuit of literature, when some seditious publications caused him first to be imprisoned, and afterward to repair to London, where he conducted a French journal; he then went to the United States, where he wrote against slavery, having previously been one of the original founders of *la société des amis des noirs*. Returning to France on the outbreak of the revolution of 1789, he became the editor of *Le patriote Français*, a member of the commune of Paris, and having labored assiduously in the interest of the revolution, he was chosen member of the legislative assembly, where he soon took a conspicuous position as a leader of the Girondists, and as an opponent of the royal family and of the exiled nobles. After the king's flight he put himself at the head of those who demanded his deposition, and eventually taking his seat in the convention as a representative of the department of Eure-et-Loire, he was instrumental in bringing about the declaration of war against Austria, England, and Holland. He made himself, however, obnoxious to Robespierre and his party by refusing to vote for the execution of the king, and

was finally doomed to share the fate of so many of his political associates. The surviving Girondists were called Brissotins by the terrorists. His love of liberty was kindled by the ideas of Jean Jacques Rousseau, and by his residence in the United States, and he contributed not a little to the success of the revolution by the eloquence of his speeches and the ability of his publications. The 4th and last volume of his memoirs and political testament appeared in Paris in 1832.

BRISTED, JOHN, an Episcopal clergyman, born in Dorsetshire, England, 1779, died at Bristol, R. I., Feb. 28, 1855. He was educated at Winchester, studied law, came to America in 1806, and practised in New York. In 1820 he married a daughter of John Jacob Astor. Having commenced the study of divinity in 1824 under Bishop Griswold, he succeeded the bishop in 1829 in the rectorship of the church of St. Michael at Bristol, which office he discharged until 1843. He was the author of "Resources of the United States" and "Thoughts on the English and American churches."—His son, CHARLES ASTOR BRISTED, born in New York in 1820, graduated at Yale college in 1839, afterward went to Oxford, England, where he spent 5 years, and took his degree at Trinity college in 1845. At both universities he gained frequent prizes for classical attainments. He is the author of many lively papers in "Fraser's" and other magazines, of editions of some of the classics, and of "Five Years in an English University," published in 1852. He was named one of the original trustees of the Astor library.

BRISTLES, the stiff hairs which grow upon the back of the hog, and which are used to a great extent in the manufacture of brushes, and by shoemakers and saddlers in the place of needles. They are of several varieties of color and quality, distinguished as black, gray, yellow, white, and lilies. The last is the soft, silvery quality used for shaving-brushes. The demand is so great for the manufacture of the various kinds of brushes, that bristles are an important article of commerce. In Great Britain, before the repeal of the duty upon them in March, 1845, the revenue derived from the customs amounted to over \$100,000 annually. The number of pounds imported the year of the remission of the duty was 2,412,267. (See BRUSH.)

BRISTOL. I. A south-eastern county of Massachusetts, bounded S. by Buzzard's bay, drained by Taunton, Pawtucket, and other smaller rivers, diversified by many inequalities of surface, and having an area of 517 sq. m. Its seacoast, about 18 miles in extent, is indented by numerous bays and good harbors, affording opportunities for navigation and the fisheries which are extensively embraced. Iron ore is found in large quantities. The soil is of various kinds; a fair proportion of it is fertile, and produces Indian corn, potatoes, and grass. In 1850 it yielded 164,064 bushels of Indian corn, 250,488 of potatoes, 28,552 tons of hay, and 811,794 lbs. of butter. There were 3 calico-printing estab-

fishments, 18 of whale oil, 18 of jewelry, 21 saw and planing mills, 5 grist mills, 1 copper rolling mill, 6 potteries, 8 tanneries, 3 ship-yards, 1 brass and 4 iron foundries, 4 manufactory of nails, 4 of tacks, 5 of coaches, 25 of boots and shoes, 2 of britannia ware, 49 cotton and 2 woollen factories, and 10 machine shops. In 1857 it contained 140 churches, 7 weekly and 8 daily newspaper offices. The Boston and Providence, New Bedford and Taunton, Taunton branch, and Fall River railroads pass through it. Capitals, Taunton and New Bedford. The Indians called this part of the country *Pancunnaucutt*. It was formed into a county in 1685, and named from the town of Bristol in England. Pop. in 1855, 87,425. II. An eastern county of Rhode Island, having an area of 25 sq. m., being the smallest county in New England except Suffolk, Mass. Mount Hope and Narraganset bays bound it on the E., S., and W., affording with their numerous harbors advantages for navigation which can hardly be surpassed. A large amount of capital is invested in whaling and other fisheries. The surface is uneven, and presents a variety of beautiful scenery. Mount Hope, once the residence of the Indian king, Philip, is the principal elevation. The soil is very fertile, yielding different kinds of grain, potatoes, and grass. The productions in 1850 were 25,451 bushels of Indian corn, 11,075 of oats, 24,898 of potatoes, 3,062 tons of hay, and 82,262 lbs. of butter. There were 8 factories of cotton goods, 1 of nails, 1 of hinges, 2 of cordage, 1 brass and 1 iron foundry, 2 ship-yards, 14 furnaces, 3 forges, 2 brick-yards, 10 churches, 2 newspaper offices, and 1,103 pupils attending public schools. A railroad from Bristol, the capital, to Providence passes through it. Organized in 1746. Pop. in 1850, 8,514.

BRISTOL. I. A post town, port of entry, and the capital of Bristol co., R. I., 16 m. S. E. of Providence, and 14 miles N. E. of Newport, pleasantly situated on a peninsula stretching out toward the S. between Narraganset bay on the W. and Mount Hope bay on the E. The township is 5 miles long, 3 miles broad, and 12 sq. m. in area. It includes Mount Hope, a beautiful eminence 800 feet above the water, noted for the fine view from its summit, and interesting as the ancient residence of King Philip, who was killed here in 1676. The soil is very fertile, and about $\frac{1}{2}$ of the inhabitants are engaged in raising onions and other market vegetables. The village, which is much visited in summer for its refreshing sea air, contains 7 churches, 1 newspaper office, 1 savings institution, 4 banks, 1 cotton mill, 1 manufactory of breech-loading fire-arms, and an extensive sugar refinery. It has an excellent deep harbor, a prosperous coasting trade, and some commerce with the West Indies. The tonnage of the port in 1852 amounted to 18,626 tons. A railroad connects it with Providence, and steamboats from Fall River to the latter city make this one of their

landing places. During the revolutionary war it was bombarded by the British, and a large part of it burned to the ground. Pop. in 1850, 4,616. II. A post borough, and formerly the capital of Bucks co., Pa., situated on the right bank of the Delaware river, nearly opposite Burlington, N. J., and about 19 miles above Philadelphia. It is a pleasant, neat-looking town, with 4 churches, a bank, a flour mill, a mineral spring, and abundant means of communication with the chief cities of the union. A railroad from New York to Philadelphia passes through it, a line of steamboats connects it with Philadelphia, and the Delaware branch of the Pennsylvania canal terminates here in a large basin communicating with the river. About 3 miles below, near the river, is a school called the *Institut militaire*, occupying the buildings formerly used by Bristol college, founded by the Episcopalians in 1833. The town was founded in 1697. Pop. in 1850, 2,570.

BRISTOL, an important seaport and city on the borders of Gloucestershire and Somersetshire, England, 118 miles from London by railway. Pop. 137,328. The city is under the management of an ancient corporation, and has the largest local and foreign trade of any town in the west of England. Its situation at the confluence of the Avon with the estuary of the Severn gives it great advantages, which have been farther improved by dock accommodation. The British docks, which were originally formed in the reign of George III., at an expense of £200,000, were purchased in 1847 by the corporation, and are now the property of the city. It is the great commercial depot of the western district and South Wales. The foreign entries of Bristol for the year 1852 were—inward, 68,457 tons; outward, 42,756 tons. The coasting trade far exceeds this in amount. It comprised, inward, 877,000 tons; outward, 803,000 tons. The colonial trade is about equal to the foreign trade. The number of ships entered inward from foreign ports during the year ending Jan. 5, 1854, was 788, with 175,571 tons, and the clearances were 262, with 87,190 tons. Among the imports of 1853 we find about 600,000 cwt. of sugar, 100,000 hides, 200,000 qrs. of corn, 50,000 cwt. of flour, about 90,000 loads of timber, &c. The net amount of custom-house duties in 1853 was £1,194,921. Bristol has a peculiar interest, apart from its antiquities and commerce, in its early connection with America. By the enterprise of Bristol merchants some of the early expeditions for the extension of discovery in the western world were fitted out. Sebastian Cabot passed his early life in Bristol, and a Bristol ship first touched the American continent. Martin Frobisher brought one of the Esquimaux to Bristol in 1578; Hakluyt belonged to Bristol, and Newfoundland was colonized from Bristol. The city of Bristol was the second city of the kingdom, and in 1750 to 1767, the average net receipts of the customs there amounted to £155,189 sterling, while those of Liverpool

were £51,186. Now, however, was the commencement of her retrogression. In the latter part of the same century, Liverpool, profiting by the advantage of her natural position and her vicinity to the northern coal, iron, and manufacturing districts, shot rapidly ahead of her venerable rival, and has left her hopelessly in the rear. The West India trade, which formerly belonged exclusively to Bristol, has been in the present century transferred to London, since the completion of the magnificent West India docks. The growth of railway communication has also partly deprived Bristol of its long standing character as the commercial depot of the west of England, while the rapid growth of Cardiff, a small port at the mouth of the Bristol channel and a convenient place of shipment for the South Wales iron district, will probably injure both Bristol and Liverpool. These reverses have, however, injured the city of Bristol only relatively. She still maintains the character of a commercial and manufacturing town of great wealth and importance. She possesses many first class mercantile houses and manufacturing establishments. It is the great point of shipment between the south of Ireland and England, and large quantities of produce, live and dead, find their way through Bristol. Numerous manufactures are carried on, including anchors and cables, beer bottles, bricks, British spirits, colors, drugs, dyes, earthenware, hats and caps, floor-cloths, glass of all kinds, machinery and metal work, soap, starch, and numerous others, some of which are Bristol staples. A great cotton factory is an object of some note. There are 6 banking establishments, including a branch of the bank of England; a savings bank, a gas company formed by the union of the Bristol and Clifton gas companies, with a united capital of £179,800. Some of the best vessels ever launched have been built in Bristol, as, for instance, the Great Western, upward of 2,000 tons burden, and the Great Britain, of 8,500 tons. The Great Western railway, connecting London with this city, is interesting to men of science as being constructed on the broad or 6 foot gauge. It is the finest line in the united kingdom. The powerful locomotives, the easy gradients, and the rate of speed, exceeding that of any other both in ordinary and express travelling, have deservedly earned for this line the epithet of "magnificent." In a financial view, however, the broad gauge, notwithstanding its superiority to the narrow, can scarcely be called satisfactory; and except in lines branching from the Great Western, the system has not been followed. The town is provided with various literary and educational institutions. The sanitary arrangements, in which Bristol in ancient times was very defective, have of late years excited attention. The numerous narrow streets, with their overhanging houses, so dear to the lover of the picturesque, are sadly prejudicial to free ventilation and health. As may be supposed from the ancient wealth of the city, there are numerous interest-

ing monuments of antiquity, among which the church of St. Mary Redcliff is conspicuous both for its own beauty of design and ornamentation, and for Chatterton's connection with it. Within its muniment room Chatterton said that he discovered Rowley's poems, which he is charged with having invented. Beside St. Mary Redcliff, a splendid example of the Gothic style, there are many handsome churches, and also the cathedral, which has a fine Norman gateway. Among the modern buildings which adorn the town are the council-house, in the Italian style, the new guildhall, in the Tudor style, the Victoria rooms for concerts and exhibitions, the Bristol institution, with a fine gallery of art, and the bridewell prison, rebuilt after the riot of 1881.—Bristol dates from before the Roman invasion, but did not become a place of strength and importance till after the Norman conquest. In the 12th and 18th centuries it was noted both for its trade and manufactures. It figured in the wars of the roses, and was a commanding position during the war between Charles I. and the parliament. It was carried by storm by Prince Maurice and Prince Rupert in 1643, but after the defeat of Charles at Naseby was surrendered by Prince Rupert to Sir Thomas Fairfax, after but brief resistance. It was the scene of riots on account of local disputes in 1793, and of a disastrous riot in 1831, on occasion of a visit to it from Sir Charles Wetherell, an opponent of the reform bill.

BRISTOL BRICK, a sort of brick used for cleaning steel, manufactured for some years exclusively in Bristol, England. A small vein of the sand required for this purpose was found near Liverpool, but was soon exhausted. One of the owners or operatives, who had been concerned in the works at Bristol, visited the United States in 1820, where by accident he discovered that the same kind of sand which was used for the Bristol bricks might be procured at South Hampton, N. H. Since that period, bricks fully equal to the imported article have been manufactured in this country, with a large and constantly increasing demand.

BRISTOL CHANNEL, an inlet of St. George's channel between South Wales and Devonshire and Somersetshire. Its upper extremity forms the estuary of the Severn.

BRIT (*Clupea minima*, Peck), a small species of herring, varying in length from 1 to 4 inches, found at some seasons of the year in immense numbers on the coast of New England; it serves as food for the blue-fish and other predatory species. The back is nearly black, the upper part of the sides dark green, and the sides silvery with roseate and golden reflections; the lateral line is very high up, and the abdominal ridge is serrated; the lower jaw rather projects beyond the upper. It used to be very abundant in the bay of Fundy, but is rare there of late years; it is said to be frequently met with in the gulf of St. Lawrence, and is mentioned by De Kay in his fishes of New York. In the young specimens the dorsal ridge is a

black line, and the space between this and the lateral line is of a light green color, with small darker points. Its immense numbers might make it of value in some localities as a manure, and as a bait for other fish.

BRITAIN, or BRITANNIA. See **ENGLAND.**

BRITANNIA METAL, also called white metal, is said to consist of $8\frac{1}{2}$ cwt. of block tin, 28 lbs. of antimony, 8 lbs. of copper, and 8 lbs. of brass. Its composition, however, is variable. Dr. Thomson gives the analysis of one specimen: tin, 85.72; antimony, 10.89; zinc, 2.91; copper, .98—1.00. It is cast into ingots and rolled into thin sheets. It is an alloy of great use for the manufacture of domestic utensils, and is very generally employed as the base of the articles designed to be plated with silver. The manufacture was introduced into England about the year 1770, by Jessop and Hancock.

BRITANNIUS, son of the emperor Claudius and Messalina, was born A. D. 42, in the 2d consulship of his father. His original name was Claudius Tiberius Germanicus, but when the senate conferred the title of Britannicus on the emperor, the infant prince was allowed to participate in the honor, which henceforward became his distinctive appellation. After the death of his mother, and the marriage of his father with Agrippina, that unscrupulous woman prevailed on Claudius to set aside the claims of Britannicus to the throne, and to make her own son Nero his heir. On the accession of Nero, Agrippina, finding her wishes and commands alike disregarded by her son, threatened to present Britannicus to the legions, and to proclaim the superior validity of his title. Nero determined to rid himself of so dangerous a rival. A dose of powerful poison was dissolved in a goblet of wine and handed to him at a banquet. He drank, and immediately expired. As his funeral passed to the Campus Martius a terrible storm raged, and the rain descending in torrents washed from his visage the paint with which it had been smeared, and exposed to the affrighted populace his swollen and blackened features. Britannicus was in the 14th year of his age when he was murdered.

BRITINIANS, a congregation of Augustine monks, taking their name from their principal house in Britini, Ancona. They were very austere, fasting much beyond the requisitions of the church, and more than many of the congregations of the same rule. They wore a gray dress; the absence of the girdle distinguished them from the Minorites. They continued a separate existence until they fell into the union of the different Augustine congregations under Pope Alexander IV.

BRITISH AMERICA comprises the whole northern part of the North American continent beyond the territory of the United States, except the portion claimed by the Russians. It extends from lat. 41° to 78° N., and from long. 59° to 141° W. The frontier line between

British America and the United States was determined by the conventions of 1839 and 1846. It is bounded east by the Atlantic ocean, Davis straits, and Baffin's bay; north by the Arctic ocean; north-west by Russian America; west by the Pacific ocean; and south by the United States. British America includes Upper and Lower Canada, the Hudson's Bay and North-Western territories, Nova Scotia, Newfoundland, Cape Breton, Prince Edward island, and New Brunswick, with Vancouver island in the Pacific. Each of these distinct possessions will be treated under its own title.

BRITISH EMPIRE, a vast complex of states in various parts of the world, subject to the monarch of England, and more or less directly governed by the British parliament. Its different portions will be treated, at length, each under its own title. We here present a condensed view of them all together:

IN EUROPE.—The united kingdom of *Great Britain and Ireland*, with the adjacent islands in the British seas, including the Shetlands, Orkneys, Hebrides, Scillies, Man, and the Isle of Wight. Area, 190,881 sq. m.; pop. 27,017,823. Wales was incorporated into the kingdom of England in the reign of Edward I. Scotland, annexed to England in 1603, long continued a distinct kingdom for administrative and legislative purposes. It was fully joined to England by the act of union in 1706, by which the Scottish legislature was dissolved, and the Scotch were admitted to representation in the British houses of lords and commons. The Scotch still maintain their own peculiar laws, customs, and national church. Ireland was nominally annexed to the crown of England in 1173; but for centuries it resisted the invader, and can scarcely be said to have been subjugated until it was reduced by Cromwell. The terrible onerousness of his iron rule makes the "curse of Cromwell" an emphatic denunciation from the lips of an Irish peasant to the present day. Up to the year 1800 it was governed by its own parliament. By an act of union it was in that year united to England, and, like Scotland, admitted to the rights of representation both by peers and commoners in the British parliament. Its laws are essentially the same as those of England, though passed specially for Ireland. The Anglican church has been imposed upon Ireland as a state church, with all the endowments of the ancient Catholic church, although less than $\frac{1}{2}$ of the population are members of its communion. The *Channel Islands*, near the coast of France, in the bay of Avranches (comprising Guernsey, Jersey, and several smaller islands), part of the dominions of William the Conqueror before he invaded England; pop. 76,065; area, 199 sq. m. *Heligoland*, a small island in the German ocean, inhabited chiefly by fishermen, taken from the Danes in 1807; pop. 2,229; area, 5 sq. m. *Gibraltar*, taken from the Spaniards in 1704, consisting of a lofty steep rock, bristling with guns, and regularly fortified, and a small space of sloping ground at its foot, on which stands its town; pop. 15,823; area, 9 sq. m. *Malta*, a strongly fortified naval and military station, with its dependency Gozo, taken from the French in 1800; pop. 184,864; area, 123 sq. m. The *Ionian Islands*, comprising Corfu, Cephalonia, Zante, Santa Maura, Ithaca, Paxos, and Cerigo, forming the Ionian republic; placed under the protection of the British government in the year 1814. The local government is carried on by a lord high commissioner, appointed by the queen, with a council of Ionians elected by the people. Pop. 226,693; area, 1,697 sq. m.

IN ASIA.—*British India*, including nearly the whole of the peninsula of Hindostan, divided into British possessions and protected states. The British possessions are divided into 8 presidencies—Bengal, Madras, and Bombay. The *Presidency of Bengal*, under the immediate authority of the governor-general of British India, includes nearly the whole valley of the river Ganges, the Punjab, Assam, Aracan, and the Tenasserim provinces, with a considerable extent of country on both sides of the bay of Bengal, also the town of Malacca, and a small district round it; Wellesley province on the Malay peninsula, and the small islands of Penang and Singapore. To these the late kingdom of Oude was annexed, Feb. 7, 1856. The presidency of Bengal is subdivided into the governments of Bengal and Agra. The *Presidency of Madras*, in the south

part of Hindostan, under a governor, who is subordinate to the governor-general. It includes the Circars and the Carnatic, sometimes called the Cooromandel coast, with Canara and Malabar, forming part of the Malabar coast. The *Presidency of Bombay*, on the north-west coast of Hindostan, under the governor of Bombay, who is also subordinate to the governor-general. It includes Sindh, Concan, part of the Aurmucbet, and several others of the old divisions of India. There are 83 subject or protected states, which pay tribute, the most remarkable of which are: The kingdom of *Domimlona*, governed by a sovereign called the Nizam, situated near the centre of Hindostan, upon the table-land of the Deccan. *Rajpootana*, including several states governed by nobles called rajahs, each of whom has his capital. *Gulcower's Domimlona*, near the bay of Cutch; capital, Baroda. *Sivita's Domimlona*, E. of Gulcower's, governed by a maharajah or great rajah; capital, Gwalior. *Mokar's Domimlona*, S. of Sindia's, including the old province of Maliva; capital, Bhopaul. *Mysore*, governed by a rajah, formerly the kingdom of the famous Hyder Ali, and his son Tippeco; chief cities, Mysore and Seringapatam. *Trasavore*, on the Malabar coast; capital, Cochlin. *Ceylon*, taken from the Dutch in 1793, is not under the East India company, but is a royal colony. *Hong Kong*, a small island near the mouth of the river Choo-Kiang, in China, and not far from Canton, ceded by the Chinese, 1843; a royal colony. *Aden*, ceded to the British in 1839, is now under the East India company.

IN AFRICA.—*Cape Colony*, extending from the Cape of Good Hope to the Orange river; taken from the Dutch in 1806; area, 203,000 sq. m.; pop. 200,546. *Port Natal*, a settlement in the E. of Cape Colony; area, 20,000 sq. m.; pop. 116,000. *Sierra Leone*, on the W. coast of Africa, settled in 1787; area, 25,000 sq. m.; pop. 45,472, mostly negroes. *Gambia*, N. of Sierra Leone, a small settlement established in 1681; area, 12 sq. m.; pop. 5,698. *Gold Coast Settlements* include several forts and trading stations on the Guinea coast, the chief of which is Cape Coast Castle; pop. 800,000; area, 8,000 sq. m. *Mauritius*, or the Isle of France, a small island in the Indian ocean, E. of Madagascar, taken from the French in 1810; area, 760 sq. m.; pop. 180,828. The *Seychelles*, the *Amirante* and the *Chagos Islands*, with *Rodrigue*, are small islands near Mauritius, and are under the governor of that island; pop. about 7,000. *St. Helena*, a small island in the Atlantic ocean, ceded by the Dutch in 1651; pop. 5,490. *Ascension*, a still smaller island, N. of St. Helena; pop. uncertain.

IN NORTH AMERICA.—*Canada*, taken from the French in the years 1760 and 1763. It is divided into 2 parts, Canada West and Canada East. Pop. of Canada West, 852,006; pop. of Canada East, 904,000; area, 855,000 sq. m. *New Brunswick*, pop. over 300,000; *Nova Scotia*, pop. 276,117; *Cape Breton*, *Prince Edward Island*, and *Newfoundland*, pop. 100,000. *Hudson's Bay territory*, population consisting mainly of Esquimaux and North American Indians. *Vancouver's Island*, on the western coast of Hudson's Bay territory, is a royal colony; area, 12,000 sq. m.; pop. 2,000. *Bermuda*, in the Atlantic ocean, off the coast of the United States, settled in 1609; pop. 11,092.

POP. 11,052.
IN THE WEST INDIES.—*Jamaica*, taken from the Spaniards, 1655; pop. 877,453. *Burbaeos*, settled in 1605; pop. about 145,000. *Trinidad*, taken from the Spaniards, 1797; pop. 65,000. *Antigua*, settled 1693; pop. 87,000. *Grenada*, with the small islands, rounded off by the French, 1763; pop. 83,675. *St. Vincent*, ceded by the French, 1763; pop. 50,123. *St. Christopher*, settled 1633; pop. 23,177. *St. Lucia*, taken from the French, 1806; pop. 24,350. *Dominica*, ceded by the French, 1763; pop. 22,900. *Tobago*, ceded by the French, 1763; pop. 16,373. *Nevis*, *Montserrat*, *Anguilla*, *Burbaeo*, *Antagada*, *Torito*, and *Virgin Gorda*, are small islands; pop. less than 30,000. *The Great, Middle, and Small Cayman*; pop. only 200. *The Bahama Islands*, settled in 1629; pop. 23,000. The entire population of the British West Indies is over 950,000; area, 7,799 sq. m.

IN SOUTH AND CENTRAL AMERICA.—*British Guiana*, including settlements on the rivers Essequibo, Demerara, and Berbice, taken from the French in 1809; area, 50,000 sq. m.; pop. 124,693. *Bahia* settled in 1677; area, 9,600 sq. m.; pop. 80,000. *Falkland islands*, in the Atlantic ocean, off the S. E. coast of South America; a whaling station; pop. 550.

IN AUSTRALASIA.—*New South Wales*, at the eastern side of *Australia*, settled in 1787; pop. in 1857, 800,000. *Victoria*, or *Port Phillip*, settled in 1834; pop. 414,000. *South Australia*, settled 1834; pop. 103,000. *Western Australia*, or *Swan River*, settled 1829; pop. 14,000. *Van Diemen's Land*, or *Tasmania*, settled 1803; pop. 80,000. *New Zealand*, settled 1839; pop. Europeans, 180,000. *Labuan*, a small island off the coast of Borneo; pop. 1,335. *Sarawak*, a protected state in Borneo, governed by Sir James Brooke.

APPROXIMATE ESTIMATE OF THE TOTAL AREA AND POPULATION OF THE BRITISH EMPIRE IN ROUND NUMBERS.

	Area Square Miles.	Population.
British Islands.....	120,850	37,000,000
Possessions and dependencies in Europe.....	1,350	450,000
“ “ Asia.....	1,500,000	189,000,000
“ “ Africa.....	250,500	950,000
“ “ N. America.....	8,000,000	2,550,000
“ “ W. Indies, B. & C. Amer.....	63,000	1,100,000
“ “ Australasia.....	1,200,000	1,050,000
Total.....	6,130,000	915,100,000

* ASIA—INDIA ACCORDING TO THE STATISTICAL REPORT PUBLISHED BY THE EAST INDIA COMPANY IN 1851.

		Area.	Population.
British provinces under the	governor-general.....	216,040	22,525,545
" " "	Leut. gov. of Bengal.....	731,969	40,532,297
" " "	" N. W. provinces.....	105,159	33,654,128
" " "	governor of Madras.....	125,090	22,871,297
" " "	" Bombay.....	121,564	11,700,940
Native states in Bengal.....	515,532	28,709,500	
" Madras.....	51,208	5,215,671	
" Bombay.....	67,515	4,060,370	
Ceylon.....	54,664	1,680,500	
Hong Kong.....		59,017	34,664
			1,567,017
Total.....		1,408,896	108,054,165

BRITISH GUM, a name given by the calico printers to starch calcined at a temperature of about 600° F., by which it becomes brown and soluble in cold water, and loses its property of forming a blue color with iodine. It is used merely for thickening their colors.

BRITISH MUSEUM, a national depository of science, literature, and art, which owes its origin to the will of Sir Hans Sloane, an eminent physician and naturalist, who, dying in 1753, bequeathed to the nation his collection of medals and coins, antiquities, seals, cameos, drawings and pictures, and his library, consisting of 50,000 volumes and manuscripts, on the condition of the payment of £20,000 to his heirs. The British parliament accepted this condition, by an act passed in the month of June, 1753, and by the same act directed that the Cottonian library, a collection of valuable historical documents which had been made by Sir Robert Cotton, during the reign of Elizabeth and James I., and which had been acquired by government in the reign of Queen Anne, should be added to the Sloane collection, together with a library of about 2,000 printed volumes, called Major Arthur Edwards's library, which had existed as an appendage to the Cottonian library since 1738, the year in which it had been bequeathed to the trustees by its proprietor. The book department of the British museum was still further increased by the purchase, for £10,000, of the Harleian library of manuscripts, a splendid collection of about 7,600 volumes of rolls, charts, and other historical documents, which had been accumulated by Robert Harley, earl of Oxford, and his son and successor, Edward Harley. In 1754, Montague house, one of the largest mansions in the metropolis, was appropriated for the reception of these collections, which have since been increased by the munificence of successive parliaments, and by gifts

bequests, and copyrights, constituting at the present day a national institution of which the English nation is justly proud, unrivalled, in the variety, extent, and usefulness of its treasures, by any similar institution in the world. It is situated in Great Russell street, Bloomsbury. This location is in a central part of London. From the rapid increase of the various collections, and the insecurity of the old building, a new and more commodious structure became necessary. Accordingly, in 1823, the present noble pile, designed by Sir Robert Smirke, was commenced, and completed by his younger brother, Mr. Sydney Smirke; and in 1845, Montague house was finally levelled with the ground, and the new portico was finished April 19, 1847. According to the report of the commissioners appointed in 1847-'48, to examine into its constitution and government, the buildings alone have cost, since the year 1823, nearly £700,000. The new reading room, just completed, has cost £150,000 in addition. The whole expenditure in the maintenance of the institution, and for purchases in the various collections since 1755, independent of the amount expended on the buildings since 1823, exceeds £1,500,000, or nearly \$8,000,000. Beside this liberal outlay by the British government, there have been numerous magnificent bequests from individuals. The acquisitions from this source, for the 12 years preceding 1835, were estimated by the secretary to amount to not less than £400,000. The annual receipts of the institution, of late years, from parliamentary grants and the interest of private bequests, have been upward of £50,000. The receipts for the year 1847, as given by Mr. R. W. Pearson, in the minutes of evidence before the commissioners appointed to examine into the constitution and government of the museum, amounted to £53,999 18s. 6d., independent of special grants. Of this amount £21,041 10s. 8d., or upward of \$100,000, was expended for salaries. The expenditures for the year ending March 31, 1857, were: £28,398 for salaries to officers; £2,806 for house expenses; £14,784 for purchases of books, &c.; £12,578 for bookbinding, &c.; £2,248 for printing catalogues, &c.; £2,000 for the purchase of London antiquities; £1,000 for Sardinian antiquities; £2,444 for ivory carvings; £17,485 for miscellaneous expenses; total, £53,688, showing an increase of £21,684 over the preceding year. The total expenditure for the year ending March 31, 1858, amounted to £55,992 2s. 9d.—The different departments of the museum are 7 in number, namely, manuscripts, printed books, antiquities, prints and drawings, mineralogy and geology, zoology, and botany; to which should be added the reading room. All of these departments are under separate keepers, to whom, and their assistant keepers and their assistants, attendants, and subordinate officers, the business of the museum is intrusted as regards the care and preservation of the collections, and the access of the public for the purposes of inspection and study.

The library occupies the ground floor of the present building, filling to repletion 25 spacious apartments and galleries, one of which measures 800 feet in length. In July, 1838, the volumes of printed books, being counted one by one as they stood upon the shelves, were found to be in round numbers 235,000. Counted in the same manner in December, 1849, they were found to amount to 435,000. In May, 1851, they amounted to 460,000, and in July, 1853, to 510,110. The library now consists of 575,000 printed volumes, and 40,000 volumes of manuscripts, exclusive of more than 20,000 original rolls, charters, and deeds. It has also a noble collection of pamphlets, more than 200,000 in number, illustrative of English and French history, and a progressive collection of newspapers, from the first appearance of these publications early in the 17th century. The manuscript collections are deposited in 4 rooms, situated at the southern extremity of the east wing, adjoining Great Russell street, forming what is termed the "manuscript department." These collections, which have been pronounced by competent judges to be the most numerous, and in some respects the finest in the world, are 11 in number, several of which once formed the private libraries of men eminent in rank, and of refined taste and culture. They are as follows: Sloane, acquired in 1753, containing 4,100 volumes; Cottonian, 900 volumes; Harleian, 7,639 volumes; Royal, 1,950 volumes; Lansdowne, in 1807, 1,245 volumes; Hargrave, in 1813, 499 volumes; Burney, in 1817, 524 volumes; King's, in 1823, 438 volumes; Egerton, in 1829, about 2,000 volumes; Arundel, in 1831, 550 volumes; additional, about 5,000 volumes. The progress of the printed collections will be best understood from the following brief chronological summary of the more important donations and purchases, made since the foundation of the library in 1753, which we compile from Sims's *Hand-Book*. 1759—A collection of Hebrew books, 180 volumes, presented by Solomon da Costa. 1762—A unique collection of tracts, published 1640-'60, consisting of about 80,000 articles, presented by George III. 1766—A collection, rich in biography, bequeathed by the Rev. Dr. Birch. 1768—A fine collection of Bibles, bequeathed by Arthur Onslow. 1766—A very fine collection of classical authors, 900 volumes, bequeathed by Mr. Tyrwhitt. 1799—A splendid collection of rare editions of the classics and of Italian authors, 4,500 volumes, bequeathed by the Rev. Clayton Mordaunt Cracherode. 1815—Dr. Burney's collection of books on music; purchased. 1815—A collection of books belonging to Baron de Moll, 20,000 volumes; purchased at Munich. 1818—Dr. Burney's library of printed books, valued at 9,000 guineas; purchased by a special parliamentary grant. 1820—A splendid library, rich in scientific journals and books on natural history, 16,000 volumes, bequeathed by Sir Joseph Banks. 1823—The magnificent library formed by George III., at a cost of £130,000,

amounting to about 80,000 volumes, presented by George IV. 1847—A collection of the Chinese books of Robert Morrison, in 11,500 volumes, presented by the secretary of state for the foreign department. 1847—The library of the right honorable Thomas Grenville, 20,240 volumes, collected at a cost of upward of £54,000; bequeathed in 1846, and removed to the museum in 1847. 1848—A collection of Hebrew works formed by H. J. Michael, of Hamburg, 4,420 volumes; purchased. Among many rare treasures of the Grenville library may be mentioned the Mentz Latin Bible, commonly called the Mazarin Bible, by Gutenberg, in 2 vols., on vellum; the unique copy, on vellum, of the 1st edition of Livy, by Sweynheim and Pannartz, 1469 (purchased at Mr. Edwards's sale in 1815, for 860 guineas); the 1st edition of Ovid, by Azzaguidi; a copy of the Aldine Virgil of 1505; a first Shakespeare, one of the finest known, 1623; and a beautiful series of early editions of the *Orlando Furioso*. The number of volumes added to the library for the years 1843-'53, according to the parliamentary returns, was 206,702, being an average of 18,791 volumes per year. The collection of antiquities consists of the Egyptian and Assyrian antiquities, the former including the trophies of the Egyptian expedition of 1801; the Elgin marbles, purchased for £35,000; the Phigalian marbles, purchased for £19,000; the Towneley marbles, purchased for £28,200; Sir William Hamilton's Greek and Etruscan vases; Mr. Richard Payne Knight's collection of coins and medals, and many other works of ancient and modern art. Garrick (whose collection of old English plays is in the library) bequeathed to the museum a statue of Shakespeare which was executed for him by Roubiliac. The world-wide celebrity of the museum is not a little due to the remarkable array of works of art. They have contributed powerfully in facilitating and stimulating the study of the great models of antiquity, especially the Elgin marbles, which are the most perfect specimens of the art of Phidias. The most recent contributions to the department of antiquities are the celebrated Nimroud marbles, collected from the ruins of Nineveh and Babylon, by Mr. Layard, and the Budrum marbles, which reached England in 1857.—The government of the museum is vested in a board of trustees, 48 in number, of whom 1 is named directly by the crown, 28 are official, 9 are named by the representatives or executors of parties who have been donors to the institution, and 15 are elected. The principal librarian is Mr. Antonio Panizzi, who has recently been appointed to this responsible place, having been for many years the keeper of the department of printed books. The new reading room, which was commenced (Mr. Sydney Smirke being architect) in 1854, and opened to the public on the 18th of May, 1857, is a circular building in the inner quadrangle of the museum, occupying an area of 48,000 square feet. It is constructed principally of iron, the whole cost, in-

cluding fittings and contingent expenses, being £150,000. It has ample accommodations for 800 readers, each person having allotted to him a space 4 feet 3 inches long, with table, shelves, &c. There are 85 reading tables, and 2 are set apart for the exclusive use of ladies. In the centre is a raised platform or enclosure for the superintendent, around which in 2 concentric circles are the catalogue tables. The catalogue, which is in manuscript, is being drawn up on a uniform plan, from all the various catalogues, printed or manuscript, which now exist. It now (June, 1858) extends to the letter I, comprising 628 folio volumes. When completed, it will probably reach to 1,500 or 2,000 volumes. The direction of this herculean work is intrusted to the keeper of the department of printed books, Mr. J. W. Jones, successor to Mr. Panizzi. Under the galleries are book presses filled with a large library of reference for the use of readers, comprising most of the standard works on the various branches of learning, and an extensive collection of dictionaries of all languages, biographical works, encyclopædias, parliamentary histories, topographical works, &c., &c. These books, which are about 20,000 in number, can be consulted at pleasure without the usual formalities of the ticket system. Access to the reading room may be obtained by written application to the librarian. Tickets are issued for 6 months, and at the expiration of this term fresh application is to be made for a renewal. No person can be admitted without a ticket, and the tickets are not transferable. All the buildings of the museum are closed between the 1st and 7th of January, the 1st and 7th of May, and the 1st and 7th of September; also on Sundays, fast days, and holidays. The whole establishment is open to public view on Mondays, Wednesdays, and Fridays, from 9 till 4 during November, December, January, and February; from 10 till 5 during March, April, September, and October; and from 10 till 6 during May, June, July, and August. The reading room is open daily, with the above exceptions, 7 hours in the winter, 8 hours in the spring and autumn, and 9 hours in the summer. Artists are admitted to study in the galleries of sculpture between 9 a. m. and 4 p. m., every week day, except Saturday. The print room is also closed on Saturdays. In 1856 there were 861,714 visitors to the general collections; 58,423 visitors to the reading room; 2,918 visits of students to the galleries of sculpture; 3,096 visitors to the print room; 2,299 visitors to the coin and medal room. Total visits 428,449, showing an increase of 27,885 visitors over the preceding year.

BRITO, BERNARDO DE, a Portuguese historian, born at Almeida, Aug. 20, 1569, died there Feb. 27, 1617, was a Cistercian friar, the historiographer of that religious order and of the kingdom of Portugal, and published among other writings a work on the Lusitanian monarchy, which he completed down to the conquest of the Arabs.

BRITO, FELIPE DE, a Portuguese traveller,

born at Lisbon about 1550, died in 1618. He visited the East Indies at an early age, and established himself at Pegu, where he soon became wealthy by trading in salt and charcoal. In 1601, by order of the king of Aracan, Brito erected a fort before Syriam, which soon became the business centre of the town of Pegu. This, however, aroused the jealousy of the king of Aracan, who declared war against Brito. Several battles took place, in which the king was defeated, and a treaty of peace was at length declared, which the son of Brito was sent to ratify. Young Brito was treacherously murdered, and war recommenced with increased fury, and lasted until 1607. Brito received the title of king, and married a natural daughter of the viceroy of India. Having become firmly established in power, he rebuilt the fort of Syriam, which had been destroyed, and also founded the town of Dela, which became a considerable commercial place. The king of Burmah, fearing so powerful a rival, sent against him an army of nearly 200,000 men. After a severe action Brito was forced to succumb, March 30, 1618, and submitting himself to the king of Burmah, was impaled and lived a day suffering the most fearful torments. A book which he wrote on his experiences in the East has never been printed, but exists in the royal library of Spain.

BRITO FREIRE, FRANÇOIS DE, a Portuguese historian, died at Lisbon, Nov. 8, 1692, officiated as admiral of the Portuguese fleet in Brazil, and contributed to the expulsion of the Dutch. He left a valuable work on the history of the war (Lisbon, 1675).

BRITON, an inhabitant of the island of Britannia. Concerning the origin of the population of the British isles which approaches the nearest to being indigenous, as being in possession of the soil at the time of its first discovery, there has been much doubt, and there is still some dispute. That the inhabitants of Britain, and of the British isles generally, were of that kindred stock of nations to which modern ethnologists have given the name of Indo-Germanic, is not to be questioned; but it is more doubtful to what tribe or tribes—if there were more than one—they are to be assigned. Cæsar testifies that, on his arrival, England was occupied by 2 distinct races; that in the interior having occupied the island from time beyond the memory of man; that of the coasts being identical with what he calls the Belgians of Gaul, and being in some measure a transitory population, common to both sides of the channel. They were also, according to his account, nearly homogeneous with the Gauls, and of the same religion or superstition with them, the most sanguinary druidism, unconnected with idolatry; and although in many respects far more barbarous, they had a general community of customs and interests, and were accused of furnishing succors to the Gallic tribes, which were in hostility with Rome. Cæsar again distinguished the inhabitants of

the interior of Gaul from the maritime tribes, inhabiting the northern districts of France, along the southern shores of the channel, from the estuaries of the Rhine and Scheldt to the Isle of Ouessant. The latter of these he calls Belgians, and the former Celts. The Gauls of the north of Italy, Cisalpine Gaul, were, according to every testimony, of the same race with those of central and southern Gaul, and a distinct connection can be traced between their language, as shown in the names of their tribes and towns, and that of the Gallic Celts. We now come to another consideration, which appears in some degree contradictory, or, at least, involves a confusion of names, which does not, however, in reality amount to a matter so worthy of consideration as it has been represented. Diodorus also states that the inhabitants of Gaul proper, or France, consisted of 2 great divisions of people, whom the Romans included under one name of Gauls, viz., the Celtic tribes of northern Italy, of central and southern Gaul, and of Spain, and the more remote tribes, who dwelt along the shores of the ocean, and as far eastward as Scythia. These he calls the true Gauls; while, at the same time, he asserts that to these tribes belong the Cimbri, whom some authors have identified with the Cimmerici of the Tauric Chersonese, or Crimea, whence they imagine them to have moved northwestward, above the confines of civilized Europe, except where they came in contact with the Greeks and Romans on the extreme north of their dominions, to the Cimbric Chersonese, or Jutland, whence they again descended southwestward, along the shores of the North sea and the channel, where they are still found. So far, all this is plain sailing. Diodorus, whom Niebuhr supposes to have learned his distinctions of Posidonius, corroborates Cæsar as to the existence of 2 races, whom he calls "Gauls and Celts," while the Roman calls them "Belgians and Celts, whom we term Gauls"—thereby exactly transposing the name of Gaul. Again, Diodorus asserts that the tribes, whom he calls Gauls, and Cæsar Belgians, were Cimbri. Cæsar states that the maritime Britons were identical with the Belgians, or Cimbri, whom Diodorus calls Gauls—that is, Gael—while the Britons of the interior were identical with the Celtic tribes of central Gallia, whom he calls Gael. But we find, in fact, that the maritime tribes of the isle of Britain, now confined to the principality of Wales, who still call themselves Kymry—Cimbri—and still retain a distinctive language, were entirely distinct and different from the tribes of the interior, of Celtic origin—the Highlanders namely, and the Irish, who still call themselves Gael. From all this, we come to the conclusion that in this confusion of names, Cæsar is borne out by the fact, that the races which he designates as Celts or Gael, continue to style themselves so to the present day, while those whom he distinguishes from the Gael, and to whom Diodorus assigns a distinct origin, eschew

the name of *Gael*, use a different, although cognate language, and have been at war with them from time immemorial, under the name of *Kymry*. Add to this, that the French of the shores of the channel, especially of Normandy and Brittany, are still a distinct race from the central French; that they are nearly homogeneous with the Cimbric Britons of Wales; that their language is still cognate, and the names of their maritime towns, as well as their antiquities and monolithic ruins, nearly identical. It may be affirmed, and with some truth, that a part of this connection and similarity is assignable to the immigration of the Cimbric tribes into France, on the Saxon irruption and conquest of all Cimbric Britain. But this is only to travel in a circle; since the cause of that immigration of the Cimbric tribes into France, rather than into Ireland, when driven out by Saxon cruelty, is that the population of that portion of France to which they fled was friendly, was kindred, was Cimbric, while that of Ireland was Gael and hostile. It is worthy of remark, that, when William the Bastard conquered Saxon England, by the aid of Breton and Norman knights, the latter immediately intermarried and amalgamated with the Welsh, centuries before they manifested the slightest inclination to mix with the Saxons; and that even when at deadly issue of war with them, while they might regard them as a savage and hostile race, they never regarded them, as they did the Saxons and the Gael, or Erse, as an inferior and degraded race. It is evident, therefore, that, in the earliest known times, there were in Britannia 2 races, the Cimbric and the Gaelic Celts, both cognate, though entirely distinct tribes, or divisions, of the Celtic branch of the Indo-Germanic nation.—Tradition seems to have assigned priority of tenure to the Gael, and successful invasion to the Britons, or Cimbri; and tradition is sustained by the relative local situation of the races at the time of their first discovery, and by the juxtaposition of the French and English Cimbri, along the opposite sea-shores of the channel, dislodging and disconnecting the Gaelic tribes of the two countries, between whom they permanently interposed themselves. It is another, and wholly different question, which of these races it was—if either, and not one entirely distinct—that captured Delphi and burned Rome under Brennus, some 600 years, more or less, before the Christian era. This, however, does not in any way concern the question of the origin or connection of the races which occupied Gaul and Britain, 4 or 5 centuries later, in the days of authentic history. It may be well here to state that no distinction whatever is to be founded on the ascription of various tribes to the nomenclature of Celts or Gauls, which, widely as they now appear to differ in sound and in orthography, were originally identical. They are both Greek words; and, in their first forms, were *Keletai* and *Galatai*, whence *Keltai* and *Galtai*.—*Kelts* and *Galts*,

which modern mispronunciation of the hard Greek *κ* and Latin *c* has changed into *Celts* and *Gauls*, or, as we now write it, *Gauls*. The original form still survives in that part of Asia Minor which was settled, at a very early date, by these people, and which we still call *Galatia*.—Of the Cimbric race, unmixed, remains the pure Welsh population; of the Celtic race, unmixed, the Gael of the highlands of Scotland, and the Erse Gael of Ireland. Of the Cimbric race, intermixed, more or less, with Saxon, Danish, and Norman blood, is composed the present English race, wherever it now exists, which it has become the fashion to style Anglo-Saxon, though it is probable that the present race has fewer characteristics of the Saxon than of any one of the other constituent races. In the English of England, of Hindostan, Australia, and the British provinces, there is, it may be said, no intermixture whatever—or the least imaginable—of Erse or Gaelic blood. More than elsewhere such exists in the North American colonies of Great Britain. The English race, in America, exists in the New England states, nearly unmixed, and particularly clear of any Celtic cross. In the middle states it is greatly intermixed with Erse and Teutonic, and, more or less, with French and Holland blood. In the south-west, with French and Spanish strains.—When discovered by Cæsar, the Britons were hardly to be called a barbarous people, being scarcely removed from the condition of primitive savages. They generally went, both sexes, wholly naked, though some of them—whether separate tribes, or superior individuals, it is not stated—wore garments of dressed leather. They tattooed their flesh, and stained themselves blue with woad—practices indicating a very low scale of humanity. They were polygamous; but the polygamy, like that of the *Todahs* of Hindostan, was the converse of that of the Mohammedans and Mormons, every woman having nine, ten, or more husbands, the children of whom were brought up in common, the first husband, in point of date, having some preferences in position. They wore no armor, except bucklers, but understood the working of iron, brass, and tin. They had horses, which they both rode and drove, harnessed to scythed cars, in battle. They had cattle in abundance, of which they used both the flesh and milk, though they knew not the use of cheese. It is doubtful whether they had any agriculture; some speaking of their raising grain and drinking wine made of barley—ale—and others mentioning no such habits. Probably they write of different times; and, when first discovered by the Romans, the Britons did not till the soil, but speedily learned to do so.—It is determined by the best ethnological authorities that there is no mixture whatever of Basque, Spanish, Celtiberian, or Semitic-Phœnician blood in any of the tribes, whether Cimbric or Erse, of Britain; and all history utterly contradicts and confounds the legends of any one of the British islands having any other source of Christianity

than through their Roman conquerors. Such as they had, was mostly compulsory; and on the withdrawal of the legions, a large proportion of the inhabitants of both the islands, Great Britain and Ireland, relapsed into druidism, which had never been extinguished in the latter island, owing to the small progress made by Roman civilization on its shores.

BRITTANY, or BRETAGNE, an ancient province of France, consisting of the large triangular peninsula which, projecting into the Atlantic, forms the western extremity of that country. Washed on 3 sides, N., W., and S., by the sea, it joined on the E. the provinces of Normandy, Maine, Anjou, and Poitou. Its coast line, indented by numerous bays and harbors, was about 500 miles in length, extending from the bay of Cancale, on the confines of Normandy, to that of Bourgneuf, some 20 miles S. from the mouth of the Loire. Its greatest length from S. E. to N. W. was 185 miles; its greatest breadth 105 miles; its area, 13,085 sq. m. It is now distributed among the departments of Loire-Inférieure, Ile-et-Vilaine, Finistère, Morbihan, and Côtes-du-Nord. The progress of civilization, although penetrating more slowly here than anywhere else in France, has somewhat allayed the wild originality which once characterized this land and its inhabitants; but both still possess a special interest for travelers and archaeologists. The broken hills by which the interior of the country is intersected, its narrow valleys, its partly unnavigable streams, its vast and thinly populated heaths, its old castles standing on solitary hillocks with their dismantled walls and dilapidated towers, its extensive forests, which, having been once the resort of the druids, seem yet to preserve something of their mysterious horrors, its sandy shores or rugged reefs on which a dark sea breaks its heavy waves, the strange garb of its herdsmen, their harsh Celtic language, all particularities combine to stamp the region with a strange and striking character. Brittany was for centuries independent of the empire to which it now belongs. Previously known as Armorica, it was indebted for its new name to colonies from Great Britain, which settled at various periods on its territory. These emigrations can be traced as far back as the 8d century; but it is probable that the definitive change of appellation took place only about the middle of the 5th century, when numbers of British families left the island on account of the Anglo-Saxon invasion. In this hospitable land, being somewhat out of the reach of the declining power of Rome, the colonists found no great difficulty in vindicating their independence. One of their native kings, called Audren, is said to have sent troops to aid Aëtius in resisting Attila. A little later, the country being divided between several princes, the powerful Clovis brought some of them to submission. Under Charlemagne, the paramount power of the Frankish king over Brittany increased; but its princes, availing themselves of the weakness of his suc-

cessors, reconquered their independence, so that the principal of them was acknowledged as a king by Charles the Bald. There prevailed among them something of a feudal organization, the counts of Rennes, Nantes, and Cornouailles being the most powerful, and one of them being generally accredited as the chief of the confederation. Such was probably the state of things which prevailed until the end of the 12th century, when Conan IV. succeeded in bringing all parts of the country under his own control, calling it the county of Brittany. His daughter, Constance, who was his only heiress, married Geoffrey, 3d son of Henry II. of England, to whom she brought the title and power of count. On his death, his son Arthur inherited both, but was soon assassinated by John Lackland, his uncle, when Philip Augustus tried to seize upon Brittany, as he had done Normandy; but the Bretons resisted, and declared for Alix, a daughter of Constance, by her 3d husband, Guy of Thouars. This Alix married Pierre de Dreux, called Mauclerc, who acted as duke of Brittany until their eldest son became of age. This prince, John I., surnamed Rufus, born in 1217, became the head of the ducal family, who reigned until the beginning of the 16th century. On the death of John III., in 1341, his niece, Jeanne of Penthièvre, who had married Charles of Blois, and his brother John of Montfort, contended for the possession of the duchy. This civil war, which lasted no less than 24 years, and was mixed with the struggle between the French and the English, is one of the brightest episodes in the annals of Brittany, the principal champion on the side of Charles of Blois being the illustrious Du Guesclin, while Chandos figured conspicuously among the supporters of John of Montfort. The former of the competitors having been finally killed at Auray, in 1364, the ducal crown was secured to the latter's son, who reigned under the name of John V.. Several princes succeeded, among whom Arthur of Richemont was grand constable of France, under Charles VII. The last of them, Francis II., who reigned from 1458 to 1488, left a daughter Anne, who, as heiress of the duchy of Brittany, was courted by the most powerful princes of her time. She was married by proxy to Maximilian of Austria, then king of the Romans, but the cunning Anne of Beaujeu, who was governing France under the name of her brother, Charles VIII., prevented the alliance from being consummated; she went to Brittany with an army, and forced the duchess to marry at once the young king of France, so that Brittany was, for the first time, united to the kingdom, preserving, however, its separate title and existence. On the death of Charles VIII., Louis XII. hastened to divorce his first wife, and to marry his predecessor's widow, thus securing the union between France and Brittany. But it was only in 1581, during the reign of Francis I., that the latter was declared to be an integral part of the French kingdom. Although losing its independence, it nevertheless persevered in maintain-

ing the rights and privileges which had been secured to it by the treaty of union. The royal power was limited here by a kind of representative government, which was called the estates of Brittany. The assembly, the sessions of which were held every other year, consisted of the 8 orders; the clergy being represented by 9 bishops, 9 deputies from episcopal chapters, and 43 abbots; the nobility, by 9 barons, and every lord of a manor who was 25 years of age; the 8d estate, or *tiers état*, by the deputies from 40 rural communities. The king was not allowed to lay any tax whatever, this being regulated by the assembly, who voted for the support of the royal government what was called a gratuitous gift. The province had also its own courts of justice; the highest of which was known as the parliament of Rennes, with 4 seneschalio jurisdictions, Rennes, Nantes, Vannes, and Quimper Corentin. More than once Brittany was compelled to stand in defence of its immunities; but its people, while vindicating what they thought their just rights, showed great devotion to their French sovereign, and when the revolution occurred, the Chouans of the province fought the last battle in behalf of royalty. Brittany was never distinguished for commerce or manufactures, but its seamen were among the boldest in the world; those of St. Malo, Brest, and L'Orient, were to be met in the most distant waters, more generally engaged in fishing than in trade. The province was usually divided into Western or Lower Brittany, consisting of the dioceses of Vannes, Quimper, St. Pol de Léon, and Tréguier; Eastern or Upper Brittany, containing those of Nantes, Rennes, Dol, St. Malo, St. Brienc. In the beginning of the 18th century, its population was about 1,650,000; it is now over 2,650,000.

BRITTON, JOHN, a learned English jurist, bishop of Hertford, died in 1276. He is the supposed author of the work "Britton," in French, which exists in MS. in many libraries, the British museum having several copies; it was first printed in 1640, and another edition in 1640; in 1762 a translation of the first 25 chapters was made and published by Robert Kelham.

BRITTON, JOHN, an English antiquary, born at Kington St. Michael, Wiltshire, July 7, 1771, died in London, Jan. 1, 1857. He was apprenticed to a London wine merchant, with whom he remained 6 years. For 7 years afterward he struggled with severe poverty, eking out a bare existence by various employments. A book on the adventures of Pizarro, which he wrote, introduced him to Mr. Wheble, publisher of the "Sporting Magazine," who employed him, with another person, to compile the "Beauties of Wiltshire," which appeared in 1801, and succeeded so well, that the authors were employed to compile the "Beauties" of all the other counties of England, in 26 volumes. His taste led him to antiquarian pursuits, and he published the 1st part of the "Architectural

Antiquities of England," in 1805; it was completed in 5 4to vols., richly illustrated, in 1815. His reputation established by these works, he devoted almost the whole of his remaining years to architectural and topographical descriptions, and antiquities. His distinct productions are 87 in number, and are valuable, not only for the information they supply, but for their numerous and beautiful engravings, from drawings expressly made for them by Turner, Pugin, and many other first-class artists. Mr. Britton's industry and economy realized a liberal competence. At the age of 76 he discontinued his labors as author. His friends, constituting the "Britton Club," entertained him at a public dinner, at Richmond, on that occasion (in 1847), and subscribed over £1,000 for a testimonial to be presented to him. On his own suggestion, the money was devoted to bringing out his autobiography. It was incomplete when he died, and such part of it as has appeared is very discursive. He published, in 1847, an "Essay on the Authorship of the Letters of Junius," in which he endeavored to prove that Junius was Col. Barré, aided by Lord Shelburne and Dunning.

BRIVES, or BRIVES-LA-GAILLARDE, capital of the arrondissement of the same name, in the French department of Corrèze, situated in the valley of the Corrèze, 15 miles S. W. of Tulle. Its fine appearance at a distance is not realized in its interior. The most remarkable buildings are a communal college, a hospital, a library, and an ancient Gothic house, dating, it is said, from the time of the English occupation. The manufactures embrace woollens, muslins, silk, handkerchiefs, and cotton yarns. There are extensive bleacheries and distilleries, and a brisk trade is carried on in brandy, wine, chestnuts, cattle, and truffles, the Brives chicken truffle pie enjoying much reputation. Gondeband, reputed son of Clothaire, was chosen king of Aquitaine here in 585. The town was united to Périgord for some time, but at the request of Gregory XI. was detached therefrom by Charles V., and added to Lower Limousin, the title of capital of which province it long disputed with Tulle and Uzerche. Near Brives-la-Gaillarde is the ruined château of Beaufort, afterward called Malemort, noted in former times as the retreat of the military adventurers called the Brabançons. Cardinal Dubois and Gen. Brun were born here. Pop. of the arrondissement, 115,369; of the town, 9,036.

BRIXEN, a district in Tyrol, pop. 220,000, with a sub-district, pop. 24,000, and a town of the same name, 1,874 feet above the sea, on the frontier of German and Italian Tyrol, and at the confluence of the rivers Eisach and Rienz. Its position is strategically very important, owing to the high and steep mountains on each side. The region produces cattle, wine (especially red wine), fruit, mineral waters, and iron (there are iron and steel factories), but little grain. The city is spoken of as early as the 9th century. It has been the residence of a bishop since 992. The

Catholic council of 1080, which pronounced the removal of Pope Gregory VII., was held here. In the peasants' war in 1525, Brixen was occupied and sacked. In 1814, the district and the town reverted to Austria. In the vicinity of the town is the fort of Francis, or Franzens-veste, erected in 1845, commanding the valley of the Eisach, and the 3 roads from Germany, Italy, and Carinthia, which join at Brixen. Pop. of the town, 8,850.

BRIXHAM, a seaport and market town of England, on the coast of the English channel, 25 miles S. of Exeter, is celebrated in history as the landing place of William III., Nov. 5, 1688, on his accession to the English throne. The rock on which he first set foot is pointed out, and a piece of it was presented to William IV., when, as duke of Clarence, he visited Brixham in 1823.

BRIZOUT, or **BRISOUT DE BARNEVILLE**, a French mechanician, born at Rouen, Sept. 7, 1749, died March 26, 1842. His father had, in 1759, invented an improved machine for fine spinning; this invention young Brizout perfected, but lack of means prevented him from introducing it to public notice. Entering the military service in 1779, he became a lieutenant, and in 1780 accompanied Baron de Viomenil to America. In 1788 he returned to France, was appointed commissary, made successful experiments with his invention, and erected a manufactory, where he produced muslins of the finest texture. He received a pension of \$400, and \$4,000 for 2 machines which he sold to the government. One of the machines was destroyed during the revolution, and he was compelled to resume his duties as commissary, but was in 1798 accused of assisting in the capture of some boats at the siege of Namur, and imprisoned. Upon his release he applied to the government for relief, and a sum of \$40,000, for the establishment of a manufactory of muslins, was awarded to him, but was never paid.

BROACH. See **BAROACH**.

BROACH TO, in navigation, to incline suddenly to windward, so as to lay the sails aback, and expose the vessel to the danger of oversetting.

BROAD MOUNTAIN, the highest in the anthracite coal region of Pennsylvania; a plateau of conglomerate rock, about 8 miles wide, and 2,000 feet above the sea, undulating just enough to contain 3 shallow coal basins intermediate between the Pottsville and Mine Hill on the south, and the Mahoning and Shamokin coal fields on the north. The extension of the Mine Hill railroad now crosses it by continuous steep grades on its southern flank, and 2 long inclined planes on the Ashland side. By the completion of this great work in 1856, the Broad Mountain has ceased to be an impassable barrier between the north-western anthracites and the seaboard.

BROAD RIVER, a stream of North and South Carolina, rising at the foot of the Blue

Ridge, in the western part of the former state, and entering York district in South Carolina. It then takes a southerly course through a rich and highly productive tract of country, covered with fields of maize and cotton, and finally unites with the Saluda to form the Oongaree river. The city of Columbia is at their junction.

BROADSIDE, the discharge of all the guns on one side of a vessel. A vessel fires a broadside into, or gives a broadside to another.

BROAD TOP MOUNTAIN, a trapezoidal plateau of semi-bituminous coal measures, in Huntingdon and Bedford counties, Penn. The highest point is about 2,600 feet above the sea. It is surrounded by a red shale valley, and an outside ring of Devonian rocks, called Terrace, Harmer, and Sidelong mountains; through this ring are several gaps, into and out of which flows the Raystown branch of the Juniata, half way between Bedford and Huntingdon. The mountain contains 2 principal coal basins, lying parallel, side by side, N. 25° E., united by the passage of the lower coals from one over the principal anticlinal into the other, and each compounded of several subordinate parallel troughs. This isolated double coal basin is separated from the bituminous coal fields of the Alleghany mountain upland, with an interval of 25 miles, by the great lower silurian anticlinal axis of Morrison's cove and Nittany valley. It is therefore not in the prolongation of the Cumberland basin, but in the synclinal next outside of this. It contains in its deepest troughs about 900 feet of coal measures, and takes in the Pittsburg coal bed, with one of the limestones above it. Two principal coal beds of the lower series, the Barnet and the Cook, averaging 6 feet thick, are worked. Coal was mined here for blacksmithing nearly 50 years ago. The Huntingdon and Broad Top railroad was completed in 1856, and will have 3 branches, each 5 or 6 miles long, up the 3 valleys which drain the western $\frac{1}{2}$ of the mountain into the Juniata. The northernmost or Shaub's Run branch is completed, and all the mines worked in 1857 are upon it. The coal is a semi-bituminous steam coal, containing from 12 to 18 per cent. of volatile matter, and of the same qualities as Cumberland coal.

BROCADE (Span. *brocado*, embroidered), a fabric resembling embroidered stuff, formerly much in vogue for the most rich and costly dresses. It was originally made entirely of threads of gold or of silver, or of the two mixed. Ornaments of flowers and foliage were interwoven and raised above the surface of the cloth. When a cheaper material, as silk, was substituted for the metallic threads, the raised ornaments of leaves and flowers still continued to characterize the brocades. Though still regarded as elegant, they are now comparatively little in use, great varieties of other beautiful fabrics having taken their place; none of which, however, exceed them in beauty, or equal them in durability.

BROCATELLA MARBLE, a name given to a brecciated marble in which the fragments are quite small. (See *BRECCIA*). As generally used, the term is incorrectly applied only to a reddish brecciated marble brought to this country from Spain.

BROCATELLE, a fabric of silk or wool, or of both materials mixed, used for upholstery. It is usually of rich design, requiring the greatest care in its weaving. It is still woven in Europe altogether by the old-fashioned hand-loom, and one yard per day is even at this time considered good work. At Humphreysville, Conn., the manufacture has been introduced with the use of power-looms, with which it is stated that a girl can weave 6 yards per day of better fabric than the German, and almost equal to the best French brocatelles.

BROCCHI, GIOVANNI BATTISTA, an Italian mineralogist and geologist, born at Bassano in Feb. 1772, died at Khartoom in Sept. 1826. In 1808, his valuable researches upon iron mines and metalliferous mountains procured him the office of inspector of mines in the newly established kingdom of Italy. In 1814 he published a work on the structure of the Apennine range, with an account of the fossils of its strata. He corrected the erroneous view of Brissak, who supposed Rome to occupy the site of an extinct volcano, to which he ascribed the tufa and other volcanic materials found on the 7 hills. Brocchi, on the other hand, satisfactorily showed that they are derived either from Mont Albano or Monte Cimino. Both of these are extinct volcanoes, the first 12 miles, the other still further, to the north of the city. In 1823, Brocchi sailed for Egypt, with the view of exploring the mineral resources of that country. He received a commission from Mehemet Ali to examine his recent conquest of Sennaar, but the climate proved too much for his constitution.

BROCCOLI, a species of cabbage, belonging to the genus *brassica*, which includes the whole family of cabbages, savoys, borecoles, and cauliflowers, but differing from the other species of the family by its smaller seeds and the tendency of its flowers to press together into fleshy heads. It most nearly resembles the cauliflower, from which it differs by no very precise characteristics. The broccoli is best raised by sowing the seed in open beds and transplanting the plants once or twice. It may be produced either in spring, summer, or autumn, according to the time when the seed is sown. It has a woody stem, and may be propagated not only by seed, but by cuttings of its stem. To effect the latter method, let a portion of the old stem containing an eye or a bud, after being well dried in the sun, be dibbled into the soil, and not be watered till it shows signs of growing.

BROCK, ISAAC, major-general in the British army, captured Gen. Hull and his whole army at Detroit, Aug. 16, 1812. He was afterward killed in the battle of Queenstown, near Niagara, Oct. 13. He was a brave and generous

officer. During his funeral the guns of the American forts were fired as a token of respect.

BROCKEDON, WILLIAM, an English artist and inventor, born in Devonshire, 1787, died in London, 1854. He was the discoverer of a method by which plumbago and its dust (previously thrown away as valueless) were freed from impurities, and re-solidified, so as to make a superior description of lead pencils, of various degrees of hardness, well adapted for artists' use. Mr. Brockedon was a painter, and author of the "Passes of the Alps," with over 100 folio engravings from drawings by himself. He also produced "Italy, Classical and Picturesque" (folio, 1842-'3), and "Egypt and Nubia" (3 vols. folio, 1848-'9).

BROCKHAUS, FRIEDRICH ARNOLD, founder of the publishing firm of Brockhaus in Leipsic, Germany, born at Dortmund, May 4, 1772, died in Leipsic, Aug. 20, 1833. He was educated at the gymnasium of his native town, and afterward sent into a merchant's counting-room at Düsseldorf. In 1798 he went to Leipsic to avail himself of the superior opportunities which that city offered for the cultivation of his mind. He devoted himself for 2 years to the acquisition of scientific knowledge and the principal modern languages of Europe. In 1796 he established at Dortmund a mercantile house for the sale of English manufactures, which he removed to Arnheim, in the Netherlands, in 1801, and to Amsterdam in 1802. Although he managed his business with success, in a pecuniary sense, he abandoned it out of distaste for mercantile pursuits in 1804, and entered into the book trade at Amsterdam. A periodical (*De Ster*, the "Star"), started by Brockhaus, 1806, in the Dutch tongue, and devoted to politics and literature, was suppressed by the government on account of its advanced opinions in political and ecclesiastical matters. The *Amsterdamsch Avond-Journal* ("Amsterdam Evening Journal"), which succeeded *De Ster*, did not live long. The confusion into which Europe was thrown by the Napoleonic wars was unfavorable to literary enterprises, and after the annexation of Holland to the French empire (1810), Brockhaus gave up his book business, returned to Germany, and re-opened his establishment in Altenburg (1811). In 1813 the firm received the title of F. A. Brockhaus. In 1808 Brockhaus had purchased the copyright of the German *Conversations-Lexicon*, which had been commenced in 1796. In 1809-'10 he completed the 1st edition by the publication of 2 supplementary volumes. In 1812 he began to publish the 2d edition of this work, which was finished under his own editorship. It was favorably received and had an extensive sale. Shortly before the battle of Leipsic, and in sight of the enemy, he commenced a political newspaper called *Deutsche Blätter*, which breathed a patriotic German spirit. This journal lasted from Oct. 14, 1813, until May, 1816. The peace of 1815 was a great advantage to the firm of Brockhaus, and enabled it to enter

upon large literary undertakings, with a reasonable assurance of adequate pecuniary returns. In 1817 the business had increased to such an extent that Brockhaus thought it advisable to remove to Leipsic, and add a printing office to his former establishment. His *Conversations-Lexicon* ran through 6 editions in his lifetime, and numerous other publications of the first rank raised the firm to a position in German literature corresponding to that which Dodsley, Constable, and Murray have severally held at different times in English literature. Among the more important publications of the firm may be mentioned Ebert's *Allgemeines bibliographisches Lexicon*, Von Raumer's *Geschichte der Hohenstaufen*, and more recently, Bunsen's translation of the Bible, of which the first part appeared in 1858. A perpetual desire to introduce into Germany a constitutional public life and a free press, similar to those of England, brought him under the ban of the reactionary governments of Germany, especially of the Prussian government, which, in 1821, ordered a censorship upon all the publications of Brockhaus, which lasted until his death.—The firm of F. A. Brockhaus was continued by the 2 sons of the founder, FRIEDRICH and HEINRICH. Under their auspices the *Conversations-Lexicon*, which was the corner-stone of the fortunes of their house, has passed through its 7th, 8th, 9th, and 10th (1851-'55) editions, to which 8 companion works were added from time to time, namely, the *Conversations-Lexicon der neuesten Zeit und Literatur* (1832-'84), the *Conversations-Lexicon der Gegenwart* (1838-'41), and the *Gegenwart* (1848-'56). In 1857 the firm commenced a 4th supplementary work of this character, called *Unsere Zeit, Jahrbuch zum Conversations-Lexicon*, the first issue appearing in Jan. 1857, and the 15th in March, 1858, and to be continued in monthly issues. The *Systematische Bilder-Atlas zum Conversations-Lexicon* was published between 1844 and 1851. In 1854-'56 an abridgment of the 10th edition of the *Conversations-Lexicon* appeared in 4 volumes (the *Kleineres Brockhaus'sches Conversations-Lexicon*). The "Encyclopædia Americana," edited by Dr. Francis Lieber (Philadelphia, 1829-'38), was based upon the 7th edition of Brockhaus, and an English translation of the 10th edition is announced by the Messrs. Chambers of Edinburgh (1857). Among the most notable periodical publications of this firm are the continuation, since 1832, of the *Allgemeine Encyclopædie der Wissenschaften und Künste*, by Ersch and Gruber; the *Pfennig-Magazin*; the *Leipziger Allgemeine Zeitung*, commenced in 1837, the *Deutsche Allgemeine Zeitung*, since 1843, and the *Leipziger Illustrirte Zeitung*, since Jan. 2, 1858. Their trade catalogue in 1851 consisted of 1,500 works. In 1850 Friedrich Brockhaus retired from business, and Heinrich has since constituted alone the firm of F. A. Brockhaus. The firm of F. A. Brockhaus has printing, binding, and also type foundry establishments connected with its book publishing and general bookselling business.

About 400 persons are employed in the different departments.—HEERMANN, the 8d son of the preceding, born in Amsterdam, Jan. 28, 1806, studied the oriental languages at Leipsic, Göttingen, and Bonn. The languages and literature of Hindostan especially engaged his attention; for the better acquisition of this branch of knowledge he took up his residence for a long time in Paris, London, and Oxford. In 1839 he was appointed extraordinary professor at the university of Jena, and in 1841 at Leipsic. In 1848 he was called to the chair of Sanscrit language and literature in the latter university, which he still occupies.

BROCKLESBY, RICHARD, an English physician, born of a Quaker family at Minehead, in Somersetshire, Aug. 11, 1722, died in London, Dec. 11, 1797. He studied medicine at Edinburgh, and subsequently at Leyden, where he took his doctor's degree in 1745. In 1746 he published an essay on the mortality of horned cattle. He was physician of the British forces in Germany from 1758 to 1763, and published his observations on medical hospitals on his return. His means being augmented by succeeding to his paternal estate of £800 a year, and his army half-pay, he saw a great deal of distinguished company, and gave handsome entertainments. In 1763, when John Wilkes was severely wounded in a duel with Mr. Martin, he was attended by Dr. Brocklesby, and the rapidity of his patient's recovery is said to have greatly benefited the doctor's rising reputation. In 1765 he was elected fellow of the royal society, which, at his suggestion, founded a professorship of chemistry at the royal military academy of Woolwich. For over 40 years he was on intimate terms with the leading statesmen, authors, artists, and other persons of intellectual note and mark in London. He attended on Dr. Johnson for many years without fee. When it was proposed that Johnson should visit the continent, in the hope that a milder climate might relieve him, and want of means was mentioned as a reason why the journey was to be abandoned, Brocklesby offered to settle on him £100 for life.

BROOKPORT, a village in the township of Sweden, in Monroe co., N. Y.; pop. 2,148. It is on the Erie canal, and on the Rochester and Lockport railroad, and contains, beside several churches, a bank, an academy, and a pump manufactory.

BROCKVILLE, a prosperous town in Leeds co., Canada West, and shire town of the united counties of Leeds and Grenville. It is a port of entry, and, with the township of Elizabethtown, sends 1 member to the legislative assembly. In addition to a number of large stores, foundries, machine shops, tanneries, factories, and mills of various kinds, it contains 2 newspaper offices, and agencies of several banks and insurance companies. It is situated on the left bank of the St. Lawrence, at the foot of the Thousand ial-

anda. A steam ferry-boat plies every half hour, during summer, between this place and Morris-town, in the state of New York. The Grand Trunk railway passes through the N. part of the town, and has a station and locomotive-engine building here. The Brockville and Ottawa railway, from the shore of the St. Lawrence, through the town, to Pembroke, on the Ottawa, is in course of construction. Pop. in 1858, about 5,000.

BRODERIP, WILLIAM JOHN, an English naturalist, born at Bristol, took his degree at Oriel college, Oxford, was called to the bar in 1817, edited a legal work on sewers and published 8 volumes of law reports. He was appointed by Sir Robert Peel a police magistrate for a metropolitan district, which position he retained for 84 years. He contributed largely to the "Penny Cyclopædia," and the major part of the zoological department of the "English Cyclopædia" is his work. He is the author of many essays in the "Quarterly Review" on subjects of natural history. He has also written "Zoological Recreations" (Lond. 1847), and "Leaves from the Note-Book of a Naturalist" (1852).

BRODHEAD, JACOB, D.D., an American clergyman, born in Ulster co., N. Y., in 1782, died June 5, 1855. He graduated at Union college in 1801; in 1804 he was installed pastor of the Reformed Dutch church at Rhinebeck, and in 1809 in the collegiate church at New York. In 1813 he established the first Dutch church in Philadelphia. He returned to New York in 1826 to the church in Broome street, removed to Saugerties in 1837, and to Brooklyn in 1841. He relinquished his pastoral labors in 1847.

BRODHEAD, JOHN ROMEYN, son of the preceding, an American politician and historian, born in Philadelphia Jan. 2, 1814, graduated at Rutgers college in 1831, and was admitted to the bar in 1835. He practised law for 2 years in New York, after which he removed to Saugerties and devoted himself to the study of American history. In 1839 he went to Holland and was attached to the United States legation at the Hague. The legislature of New York having passed an act, May 2, 1839, to appoint an agent to procure and transcribe original documents referring to the history of the state, he was commissioned under the act by Gov. Seward, in the spring of 1841. The 8 following years were spent by him in searching the archives of Holland, England, and France, which were liberally opened to his examination, for papers which might serve to illustrate the history of New York, and complete the records of the state at Albany. As the result of his labors he obtained a collection of more than 5,000 separate papers, many of them previously unknown to the historian. From Holland 16 volumes were procured, from England 47, and from France 17, comprising the reports and correspondence of home and colonial authorities concerning the affairs of the colonies in this country which, at different times, have belonged

to those governments. He returned to New York in the summer of 1844, and after a careful examination of the collection, Mr. Bancroft pronounced that "the ship in which he returned was more richly freighted with new materials for American history than any that had ever crossed the Atlantic." Mr. Brodhead took occasion to give an account of the results of his enterprise in an address before the New York historical society, Nov. 20, 1844. He deposited his collection in the secretary of state's office, and made his final report as agent, in February, 1845. All these documents were ordered to be published by an act of the legislature of March 30, 1849. On the appointment of Mr. Bancroft as minister to England in 1846, Mr. Brodhead was made secretary of legation, and remained at London until 1849. He now set seriously at work upon his "History of the State of New York," the first volume of which, containing the period under the government of the Dutch, was issued from the press in 1853. In the same year he was appointed naval officer of the port of New York, which post he held till 1857. He is still engaged in the preparation of his history.

BRODIE, SIR BENJAMIN COLLINS, an English surgeon, born at Winterslow, Wiltshire, in 1783. He was educated at the free school of Great Windmill street, London, and at St. George's hospital, under Sir Everard Home, whose successor he became in 1808, first as assistant surgeon and afterward as surgeon. In 1811 he received the Copley medal of the royal society, the highest prize in its gift, for his physiological papers in the "Philosophical Transactions." From that time forward, the career of Brodie has been one continuous series of professional successes. From 1819 to 1823 he was professor of anatomy at the royal college of surgeons. On the death of Sir Astley Cooper, in 1827, he became first surgeon to the queen. In 1834 he was created a baronet. He has since then been appointed professor of the medico-chirurgical society; vice-president and president of the royal college of surgeons; member of the council of the royal society; and corresponding member of the institute of France. The degree of D. C. L. was conferred on him in 1850 by the university of Oxford. Sir Benjamin has suggested important improvements in many kinds of surgical instruments, and in numerous cases substituted simple and less violent methods of surgical operation. Beside his more important works on the affections of the urinary organs, and diseases of the joints, he has published numerous articles in the medical journals, and a series of remarkable physiological papers on the action of the nervous centres in the production of animal heat. The latter were published in the "Philosophical Transactions" from 1810 to 1812. The published works of Brodie are: "Lectures on the Diseases of the Urinary Organs," last edition, Lond. 1849; "Observations, Pathological and Surgical, on Diseases of the Joints," 5th edition in 8vo., Lond. 1851; "Physiological Researches collected and repub-

lished from the *Philosophical Transactions*," Lond. 1851; "*Physiological Inquiries*," 1854, (3d edition, 1856).

BRODY, a town in Galicia, in the circle of Zloczow, government of Lemberg, under the sway of Austria, although the private property of the counts Potocki. It is an important commercial focus, not only for Galicia, Moldavia, Wallachia, Turkey, and Germany, but also for the adjoining empire of Russia. Its population amounts to 40,000, principally Jews. In 1779 it was established by Austria as a free port. It is dirty, and badly built, with the exception of the Potocki palace, a great synagogue, and several churches. It is the seat of an imperial administrative board for the district, and of a commercial tribunal, has a superior school for the Jews, and 2 for Christians. The commercial connection of Brody is principally with Leipzig, and more than 40 great, and about 200 smaller houses, chiefly Jewish, monopolize the trade. Two great annual fairs are held, and the transactions amount to about \$20,000,000 yearly. The traffic is in grain, horses, cattle, tallow, hides, furs, leather, wax, honey, dried fruits, colonial products, ironmongery, jewelry, wines, porcelain, &c. It also has extensive tanneries and linen factories. The mercantile houses in Brody give drafts on all the exchanges of Europe. The nobility of the adjoining Russian provinces are about to connect Brody by a railroad built by private enterprise with the city of Kiev, the river Dnieper, and the great Russian net of railroads. From May 8 to Oct. 7, 1849, Brody was occupied by Russian troops. Aug. 17 of the same year the town was desolated by a great fire.

BRODZINSKI, KAZIMIERZ, a modern Polish soldier and poet, born in 1791, at Krolowko, in the south of Poland, died in Dresden in 1835. In 1809 he entered the military service of his country, and fought against the Austrians; in 1812 he was employed against the Russians, and participated in the campaign of 1813, in Germany, until he was taken prisoner at the battle of Leipzig. When the kingdom of Poland and the university of Warsaw were established, he became professor of aesthetics and literature. His poetical productions are distinguished for their suavity, and their fidelity to nature and the national life, reproducing the songs, ideas, and manners of the villagers and peasantry. He excelled also as a translator, and introduced Scott's masterpieces into the literature of Poland. Brodzinski was the first who attempted to reinvigorate Polish poetry from the national sources, instead of imitating Latin and French models, which was the custom up to his time.

BROEKHUISEN, JAN VAN, a Dutch soldier and literary man, born in Amsterdam in 1649, died in 1707. He was apprenticed to an apothecary, but became a soldier, and served through the campaign of 1672, and afterward accompanied his regiment to America in the fleet under De Ruyter. On returning to Holland he became acquainted with Grævius, whose media-

tion at a subsequent period saved him from capital punishment for having acted as a second in a duel. After the peace of Ryswick in 1697, he obtained his discharge from the army, and, retiring to Amsteloven, he passed the rest of his days in literary labor. His edition of Propertius appeared at Amsterdam in 1702, and his Tibullus in 1708.

BROGLIE, or BROGLIA, the name of a family originally from Piedmont, established in France toward the middle of the 17th century.—VICTOR FRANÇOIS, 2d duke de Broglie, born Oct. 19, 1718, died in 1804, at Münster, was a lieutenant-general during the 7 years' war, routed the Prussians at the battle of Berghen, was created a prince of the German empire by Francis I., and promoted to the rank of marshal of France, in 1759, and became minister of war in 1789. In 1792 he led a body of French *émigrés*, who invaded Champagne.—CLAUDE VICTOR, prince de Broglie, son of the preceding, born in 1757 at Paris, died June 27, 1794, on the scaffold. He was elected deputy to the states-general, gave evidence of liberal opinions, and was for a while president of the constituent assembly. On the expiration of his term, he reentered the military service, and was sent as brigadier-general to the army on the Rhine. After the 10th August, 1792, he refused to obey the decree of the legislative assembly suspending the power of the king; was arraigned before the revolutionary tribunal, and executed.—ACHILLE LÉONOR VICTOR CHARLES, duke of, son of the preceding, a French statesman, born in Paris, Nov. 28, 1785. He was only 9 years old when his father was beheaded, but he found a protector in his mother's 2d husband, M. d'Argenson, who brought him up with paternal care. Young De Broglie gained the regard of Talleyrand, who, in 1814, presented his name for appointment to the new chamber of peers. During the Hundred Days, he was elected officer in the national guards. He married at Leghorn, Feb. 15, 1816, the daughter of Madame de Staël. Subsequent to the 2d restoration, he resumed the title of duke, instead of that of prince, previously used in his family. At the trial of Marshal Ney he used every effort to save his life. In 1822, he denounced the slave trade; and after the revolution of July, he succeeded as minister in concluding a convention on the right of search, by which he hoped to suppress that trade. He was appointed minister of public instruction, and president of the council of state, Aug. 11, 1830, but soon disagreed with his colleagues and resigned. Oct. 11, 1832, he reentered the cabinet as minister of foreign affairs, under Marshal Soult, with Guizot and Thiers as his colleagues. Having been defeated on a question of indemnity to the United States, he retired, April 4, 1834. In 1849, he was elected to the legislative assembly by the department of Eure, and figured among the leaders of the conservative party. In 1850, he repaired to London on a visit to Louis Philippe. He protested against the *coup d'état* of Dec. 2, 1851, was for a short

time under arrest, and afterward went to London. On his return to France in 1852, he refused to take the oath on the constitution, and tendered his resignation as a member of the council of the department of Eure. In 1856 he was made a member of the French academy.

BROGNY, JEAN ALLARMET, a cardinal of Rome, born 1842, at Brogny, near Annecy, in Savoy, died in Rome, Feb. 16, 1926. Although he was a swineherd in his youth, he attained by his learning and virtues a position of great influence and eminence in the church. He was successively made bishop of Viviers, of Ostia, archbishop of Arles, and bishop of Geneva, and finally cardinal and chancellor of the church of Rome. During the great schism which divided the church for more than 40 years, Brogny devoted himself to the work of conciliation. The council of Constance being called for that purpose by John XXIII. and the emperor Sigismund; the former was deposed at the 6th session, after which Brogny presided as senior cardinal until the 41st, when Cardinal Colonna was elected pope, Nov. 14, 1417, chiefly through Brogny's influence, under the name of Martin V., and the holy see was once more established at Rome. As president of the council of Constance, he had to pronounce the sentence of death upon Huss, to whom he had shown great kindness during the trial, having visited him several times in his prison, and exhorted him, but in vain, to save his life by recanting his creed. The cardinal was the founder of the hospital of Annecy, and of the college of St. Nicolas at Avignon, and of many other useful and charitable institutions.

BROGUE. In former times, the Irish and Scotch wore a sort of clog or shoe made of untanned skin, and called the brogue or brogan. This article of dress fell into disuse early in the 15th century, and the substitute was made of tanned leather, with thick soles, freely studded with large-headed nails, which took the name of the article they supplanted. These brogues or brogans continue to be worn in Ireland, and are strong, cumbersome, and heavy. By a natural process the peculiar manner in which the wearers of the brogue pronounced the English language, caused that peculiar pronunciation to be universally known as the brogue, and the application of this term is limited almost exclusively to the Irish.

BROKE, SIR PHILIP BOWES VERE, a British admiral, the commander of the Shannon, which captured the American frigate Chesapeake off Boston harbor, in 1813, born Sept. 9, 1776, died in Suffolkshire in 1840. He was educated at the royal academy in Portsmouth, entered the navy in 1792, served in the wars between France and England, and was in command of the Shannon protecting the whale fishery in the Greenland seas, when in 1812 war was declared between the United States and Great Britain. He was despatched with a squadron to blockade the American ports, but our navy did not concentrate itself so as to engage his united squad-

dron. He appeared with the Shannon alone off the harbor of Boston, immediately after Capt. Lawrence had been promoted to the command of the Chesapeake, which was lying in that harbor, as a reward for his late victorious cruise in the Hornet. He sent a letter to Lawrence, challenging him to an engagement, who, however, deeming his appearance a challenge, had ordered the Chesapeake to lift her anchors before the letter reached its destination. The Chesapeake was badly manned, equipped, and officered, the crew being to a large extent foreign mercenaries murmuring about their prize money, the ship being one of the worst in the navy, the first lieutenant being sick on shore, and the posts of 2 others being filled by midshipmen. Yet the ardor of Lawrence admitted of no hesitation. The action began June 1, 1813, at 5 o'clock p. m., in sight of the shore lined with spectators, and within 15 minutes Lawrence was mortally wounded and his ship in the possession of the enemy. This victory, coming after numerous reverses, was extravagantly applauded in England, and Capt. Broke was immediately raised to the dignity of baronet, and made knight commander of the bath.

BROKEN WIND, a terrible and incurable disease of the lungs of the horse, incapacitating him from all violent and rapid exertion. It is immediately recognizable by the manner of breathing. The inspiration is performed in somewhat less than the natural time, but with an increased degree of labor, but the expiration has a peculiar difficulty accompanying it. It is accomplished by a double effort, in the first of which, as Mr. Blaine has well explained it, "the usual set of muscles operate; and in the other, the auxiliary muscles, particularly the abdominal, are put on the stretch, to complete the expulsion more perfectly; and that being done, the flank falls, or the abdominal muscles relax with a kind of jerk or spasm." Broken wind is preceded or accompanied by cough—a cough perfectly characteristic, and by which the horseman would, in the dark, detect the existence of the disease. It is short, seemingly cut short, grunting, and followed by wheezing. Broken wind is believed to be hereditary, and in some degree consequent on malformation, on a narrow chest, a fragile membrane, and a predisposition to inflammatory diseases which end in broken wind. Horses which are greedy feeders, and distend the stomach with large quantities of unnutritious food, of which they do not readily get rid, are peculiarly liable to broken wind; which may also be produced by giving a horse a rapid and severe gallop, on a full stomach, even where there may have been no chronic affections in operation beforehand, paving the way for that result. When a horse is once thoroughly broken-winded, there is no possible cure; for, the structure of the lungs being broken down, no medicine or medical skill can repair the damage. The evil, however, may be palliated. The food given should be the most

nutritious, and that which will lie in the smallest compass. Good oats, little hay, no chaff. Green food is particularly beneficial, and carrots yet more so, as they appear, apart from their nutritious and sanative character, to have a direct effect on the respiratory organs. There are certain remedies by which, for a few days, a broken-winded horse may be made to appear sound; but, for obvious reasons, they are not inserted here, as they can be of no possible utility, and only serve to administer to fraud.

BROKER (Lat. *abroccator*, perhaps from the Saxon *abroccan*, to break up, from which is derived *abouchment*, the breaking up goods or selling at retail. See Burrill's "Law Dictionary"). The early use of this term designated a retailer of goods, generally supposed to belong to another person, and thence applied to any one making a bargain as the agent of another for the sale or purchase of goods. The distinctive character of a broker was that he acted in the behalf of another, and in his name; at least, when the contract came to be consummated, the name of the principal was in the ordinary course disclosed. It was a further incident of a broker's employment that he did not have possession of the goods sold, nor receive possession of the goods purchased, in which respect he differed from a factor. And these principles still apply. But the office of broker has been vastly extended by the increasing exigencies of commercial business. The principal classes are bill brokers, whose employment is to buy and sell notes and bills of exchange; stock brokers, who deal in stocks of moneyed corporations and other securities; insurance brokers, who are agents for procuring insurance on vessels and against fire; and real estate brokers, whose business is to buy and sell lands, and obtain loans or put out money upon mortgage security. Pawnbrokers do not come within the strict definition, as they usually do business on their own account, that is, make loans upon the pledge of personal property deposited with them; but they may also use the money of other persons for such investments, which would constitute agents, but not necessarily brokers. So exchange brokers, who buy and sell uncurrent money, or exchange different kinds of currency, although they may use funds placed in their hands for that purpose, are, as respects their principals, rather agents than brokers; for although a broker is an agent, yet an agent is not necessarily a broker. Ship brokers deal in the purchasing and selling of vessels, and procuring freights. In the city of London it is required that brokers should have a license from the mayor and aldermen, and give bonds for the proper discharge of their duties. In other large commercial towns of Europe a license is generally necessary for brokers dealing in stocks, money exchanges, insurance, loans upon pledges, &c. In the United States neither license nor security is required, except as to pawnbrokers; but certain regulations are prescribed by law in respect to certain branches of business. Stock-jobbing, by which

is meant the selling of stocks of which neither the broker nor his principal has the actual ownership at the time of such sale, is prohibited. Wagers upon stocks, that is, the nominal buying or selling of stocks deliverable at a future time, with the understanding that nothing more is to be done than to pay the difference between the price agreed and the market price at the time named, are declared illegal. In the state of New York, the rate of brokerage is fixed by law for procuring or renewing loans. The business of pawnbrokers is in large cities usually regulated by the municipal authorities. It is a general provision that a larger interest than the ordinary legal rate may be taken on loans by pawnbrokers.

BROMBERG, a government of the province of Posen, Prussia; area 4,547 sq. m., embracing 9 circles, 54 towns, and 1,802 villages; pop. 470,000, of whom $\frac{1}{4}$ are Catholics, $\frac{1}{4}$ Protestants, and $\frac{1}{4}$ Jews. The soil is sandy, the surface is level, and mostly covered with woods, and the agricultural productions are insignificant. The circle of Bromberg has 60,000 inhabitants, and the capital, of the same name, on the river Brahe, 14,420. The latter has a gymnasium and normal schools, a number of manufactories of linen and woollen stuffs, leather, sugar, chicory, Prussian blue, &c. A railway connects the town with Berlin, Posen, and other cities. There are 1 Protestant and 2 Catholic churches, 2 convents, and a synagogue. The German Catholic community, which was formed here in 1845, returned to Protestantism in 1852. The Bromberg canal unites the rivers Brahe and Netze, and thus opens a water communication between the Vistula and the Oder and Elbe.

BROME, RICHARD, English dramatist, died 1652. He lived in the reign of Charles I., and was contemporary with Decker, Ford, and Shirley. He was originally a menial servant to Ben Jonson. The "Northern Lass," the first of 15 comedies which he wrote, obtained Jonson's commendation. Brome joined with Thomas Heywood in writing the "Lancashire Witches," and 2 other plays. Soon after his death his plays were collected and published by **ALEXANDER BROME** (born 1620, died 1686), who, though a namesake, was no relation, and wrote satirical songs and epigrams on the loyalist side, during the protectorate, as well as a comedy and a translation of Horace.

BROMFIELD, JOHN, an American merchant, born in Newburyport, April 11, 1779, died in Boston, Dec. 8, 1849. He acquired his fortune first as European agent for American mercantile houses, then by engaging for a year in business in Canton, and afterward by investments of his capital in Boston, where he resided during the latter part of his life. In 1845 he bestowed upon the Boston Athenæum a gift of \$25,000, and at his death he left munificent bequests to several charitable institutions.

BROMFIELD, WILLIAM, an English surgeon, born at London in 1712, died in 1792. He was

one of the founders of the Lock hospital, and the first surgeon of that institution. In 1761 he formed one of the suite who conducted the princess of Mecklenburg, the future queen of George III., to London. He was the inventor of the *tentaculum*, and the author of several surgical treatises.

BROMINE (Gr. *βρομος*, fetid smell), an elementary substance extracted from the bittern, or mother liquor of the salt works, the residue after the common salt has been obtained. It exists in very minute quantity in sea water and salt springs which have been connected with the ocean, and in several salt springs in the interior of Europe and America, and also in some minerals and marine and fresh water plants. In salt water it is combined with magnesium or sodium, forming a bromide. Near Freeport in Pennsylvania it is extensively manufactured from the water of the salt springs. It was first separated and recognized as a new substance in 1826, by Antoine Jérôme Balard, a chemist of Montpellier. Prof. Silliman was the first to detect it in this country; he found it in the bittern of the salt works at Salina, N. Y. Bromine is a liquid of dark red color, or, by transmitted light, hyacinth red, and so volatile that a drop of it put in a flask fills it with vapor like that of fuming nitrous acid. A taper burns in this vapor with a flame green below and red above, as with chlorine. In its smell it also resembles chlorine; its taste is caustic. At a temperature below 8° F. it becomes a hard, crystalline mass, brittle, lamellar, and of a yellowish brown color. At 116.5° it gives off a vapor, the density of which is 5.54, compared with air. The density of the liquid, compared with water, is, at 59° F., 2.98. It is soluble in alcohol and ether, and sparingly so in water, giving to this an orange color. It acts powerfully, like chlorine, in bleaching vegetable substances, destroying the blue color of indigo, and decomposing organic substances. The skin is corroded and stained yellow by it, but the color soon disappears. The combinations of iodine are decomposed by it, and it decomposes those of chlorine. United with oxygen, BrO₂, it forms bromic acid, and the salts of this are bromates; with hydrogen, BrH, bromide of hydrogen, or hydrobromic acid, which possesses powerful acid properties, and forms, with bases, salts called hydrobromates. Metals in contact with its fumes combine with it as by combustion, forming bromides. In these properties, as in others also, bromine resembles iodine and chlorine. It is applied in medical treatment, in its aqueous solution of 1 part of bromine to 40 of water, for similar purposes as iodine, and acts more powerfully; is also efficient when iodide by habit has lost its action. Its use is particularly for chronic diseases of the skin, and as a wash for scrofulous tumors and ulcers; latterly it has been found a valuable remedy in croup. In the arts it is used in the daguerreotype process for adding to the effect of the iodine in rendering the metallic plate sensible to the rays of the sun, the plate, after

the application of the iodine, being wet with the aqueous solution made very weak.—Commercial bromine is apt to be contaminated with chlorine, iodine, water, and carbon, the last in the form of the binary compound bromide of carbon, an aromatic, colorless, oily liquid left after distilling the bromine; it sometimes amounts to 6 or 8 per cent. Chlorine is made use of to detect the presence of bromine and to separate it from its combinations with magnesium and sodium. In a solution free of organic matters, chlorine, if added not in excess, either in a current of the gas or as strong chlorine water, causes the bromine to be liberated, and this then imparts its orange color to the solution. On boiling this solution the bromine escapes in red vapors, which may be condensed into the liquid form. Several other processes are given for obtaining it from sea water, plants, &c., and for separating it from all traces of chlorine, iodine, &c.—Bromine acts as a poison. A case occurred a few years since on Long island, in which an ounce caused death in 7 to 8 hours. The symptoms were those of the violently irritant poisons—inflammation of the throat, mouth, and lips, and incessant burning pains. The best antidote is said to be ammonia.

BROMLEY, a market town and parish of England, in the county of Kent; pop. 4,127. It consists chiefly of one long and neatly built street, contains some good houses, a well-endowed school, a handsome college, founded by Bishop Werner, in 1666, for the residence and support of 40 clergymen's widows, and a fine Gothic church, which contains the tomb of the wife of Dr. Johnson.

BROMME, TRAUOGOTT, an enterprising German, born near Leipsic in 1802, learned the book-trade, at the same time studying various branches of science, settled in the United States in 1820, travelled extensively in Texas and Mexico, cruised in the West Indies as surgeon of a Colombian war schooner, was detained at Hayti for a year as prisoner, but with permission to explore the island. Released and indemnified by the Colombian government, he returned to Germany, where he became a partner in Walther's publishing house of Dresden, and wrote a good number of books on his travels in the new world, which proved very acceptable to emigrants, his *Hand- und Reise-buch für Auswanderer nach Nord-, Mittel-, und Süd-America*, passing through 7 editions from 1839 to 1856. Transferring his establishment to Stuttgart, in 1844, he continued to devote his attention to the same class of publications. His new guide book for emigrants to America appeared in 1852. Among the other valuable publications of his establishment is a map to Humboldt's "Cosmos," with 42 plates (1854), and the *Volkenaturgeschichte* of Rebaus (1857). —KARL RUDOLF, a brother of the preceding, born in 1804, acquired distinction as a naval engineer, and having explored the greater part of the old and the new world, and made some

new inventions and improvements in naval batteries, he received an appointment in the Greek navy in 1827, as 1st lieutenant of the frigate *Hellas*, taking a distinguished part in the war against the pirates, in the siege of Chios, and the blockade of Navarino, and subsequently in the exploits of Miaulis at Antirrhium, Lepanto, and Missolonghi. He was eventually promoted to the command of the corvette *Ipsara*, and despatched with that vessel to Candia to escort the Christian fugitives back to Greece. In 1831 he entered the ministry of marine, and was devoted to the organization of the Greek navy when the revolution broke out, which induced him to travel abroad until the accession of Otho to the throne of Greece, when he was reinstated in his former position and appointed commander of the Greek steam frigate *Hermes*. Subsequently he was employed in various functions connected with the naval service, and having projected the establishment of a naval academy, this was joined to the royal military academy, both institutions being placed under his direction, as 2d commandant, in 1839, and under his control, as superior commandant, during the period of the September revolution of 1843. He officiated in this capacity until 1848, when he was summoned to Frankfort to take part in the organization of the projected German fleet. After the expiration of the truce with Denmark he was sent to Bremerhafen, and eventually appointed rear admiral of the German navy. After the dissolution of the fleet he continued to reside in Bremerhafen, engaged in writing his memoirs, having previously published a number of other works in German, English, and French, chiefly on naval subjects. In May, 1857, he accepted employment in the Austrian service, as engineer-in-chief in the navy, at Milan.

BRONCHITIS, an inflammatory disease of the mucous membrane of the bronchi, or of the air-passages below the bifurcation of the trachea; it is also called catarrhal fever, and, when it occurs epidemically, the "grippe" and influenza; it may be either acute or chronic. All ages are liable to it, especially infancy and old age; it is most frequently produced by cold, suddenly checking the cutaneous transpiration; it may also be caused by any irritating gas; it is most common in the spring and autumn, or when the atmospheric changes are the greatest; it is a common companion of the measles, whooping-cough, and typhoid fever. The mucous membrane is found more or less injected and red, even in the smallest divisions, and sometimes thickened, which is a grave complication in the minute branches; the secretions vary according to the degree and stage of the inflammation, and may be abundant, white, and frothy, or thick, yellowish, and purulent. It comes on with the symptoms of a common cold, accompanied by fever; the pain in the chest, headache, and dry hacking cough continue for a day or two, when the cough becomes frequent, and the expecto-

ration viscid and white; the breathing becomes laborious; the chest is sonorous, but filled with râles more or less mucous according to the amount and viscosity of the bronchial secretions. After a few days these symptoms begin to decrease in severity, the expectorated matters become puriform, indicating the decline of the inflammation, and the disease ends in what may be called a critical evacuation, by copious perspiration, sedimentary urine, diarrhoea, &c. In the dyspnoea of bronchitis the chief difficulty is in inspiration, which is accomplished only by the aid of all the accessory muscles; the expiration is performed with ease; the respiration of pneumonia is merely accelerated, without obstructed inspiration, unless the minute bronchi are also affected. In capillary bronchitis, the most common form in children and in typhoid conditions, and highly dangerous, the obstruction from the viscid secretion is such that entire lobules of the lung may be collapsed from the inability of the air to enter; the forced expiratory act is $\frac{1}{2}$ stronger than the extreme force of inspiration, though ordinary inspiration is more of a muscular act than ordinary expiration; the effect of obstruction is to expel the air from the lobules, from the comparative weakness of the inspiratory act, which draws back the inspissated mucus into the bronchi, thus preventing the entrance of air, but not the expulsion of a portion of the contained air by every forced expiration. For a full account of the stages of "bronchial collapse," a state analogous to that of the non-expanded foetal lung, and including lobular pneumonia, the pneumonia of children, many carnified conditions of the lungs, the *peripneumonies des agonisants*, *hypostaticæ*, *catarrhæ*, and *typhoides* of authors, and constituting the condition denominated *apneumotosis* by Fuchs, the student is referred to the work of Dr. Gairdner on bronchitis, published in 1850. Bronchitis in children is almost always combined with inflammation of the pulmonary substance, constituting *broncho-pneumonia*. The treatment of acute bronchitis, which is generally not a dangerous disease except in old persons and in children, is by antiphlogistics (though bleeding is rarely necessary), emollient drinks, emetics when the obstruction is great, sudorifics, narcotics, and cutaneous revulsives. In chronic bronchitis, whether a sequel of the acute, or a disease of old age, there are fewer marks of inflammation, but more of thickening and dilatation of the air-tubes; the cough is generally loose, and the expectoration abundant and easy, with little dyspnoea; sometimes it seems merely local, and more annoying than dangerous; the treatment is principally by revulsives to the skin, tonics, stimulants, expectorants, and attention to the rules of hygiene. In many conditions of chronic bronchitis, medicines applied in the form of vapor are exceedingly useful; in this way narcotics, expectorants, stimulants, astringents, sedatives, and alteratives, may be applied to the very seat of the disease,

in a natural manner, and without deluging the stomach with irritating mixtures; cod-liver oil, fusel oil and spirits containing it, are also beneficial in many forms simulating phthisis.—The name bronchitis is popularly given to disease of the follicles of the mucous membrane of the air passages, generally above the bronchial division of the trachea; the disease thus named is more familiarly known as “clergyman’s sore throat,” from the fact that this class of public speakers is particularly subject to it. It may affect the nose, posterior fauces, or larynx, and is properly called catarrh, pharyngitis, laryngitis, tracheitis, and even bronchitis, according to the part of the air-passages affected; the seat of the disease is originally in the follicles of the membrane, and it may therefore be called folliculitis. In the incipient stages, as found in the pharynx, there is rarely any troublesome cough; but the abundant secretion of the follicles causes an incessant hawking to clear the throat from the tenacious mucous. It is more common in men than in women, in the proportion of 8 to 1. In many cases there is a complication of chronic bronchitis, with the expectation of a characteristic opaque matter mingled with the transparent mucus. When the follicles of the larynx and trachea are involved, a cough comes on, attended with free viscid sputa from the beginning, in this differing from phthisis; there is also great mental depression, contrasting strongly with the never-ceasing hope of the consumptive. In case of ulceration of the follicles, the cough is paroxysmal and severe; if the epiglottis be affected, there is difficulty of swallowing, with pain and sometimes dyspnoea. The disease may descend into the stomach, causing a form of dyspepsia, which yields to the internal administration of the nitrate of silver. Though the system may be implicated, the disease is essentially local, and is best treated by topical applications, and especially by means of the nitrate of silver. Dr. Horace Green, of New York, has been mainly instrumental in bringing to the notice of the American profession the remarkable effects of the nitrate of silver in this and kindred complaints, proving its efficacy and safety in cases heretofore considered beyond the reach of art. Inhalations of medicated vapors are also of great service. In a special treatise on the subject, Dr. Green has given the symptoms, course, and treatment of this disease, illustrated by numerous cases, showing its termination in complaints resembling consumption, unless arrested by suitable remedies.

BRÖNDSTED, PEDER OLUF, a Danish archaeologist, born near Horsens, province of Jutland, Nov. 17, 1780, died from a fall of his horse, in Copenhagen, June 26, 1842. He explored Greece in 1810 in company with other savants, received on his return in 1813 an appointment as professor at the Copenhagen university, and in 1818 that of agent of his government at Rome. Having obtained the latter appointment with a view to promote his archaeological labors, he afterward

explored Sicily and the Ionian islands, visited France and England, and on his final return to Copenhagen in 1832 he officiated as director of the royal cabinet of antiquities, as professor, and lastly as rector of the university. He left a large number of writings, prominent among which is his work on his travels and investigations in Greece (2 vols. Paris, 1826 and 1880).

BRONGNIART, I. ALEXANDRE THÉODORE, a French architect, born in Paris, Feb. 15, 1789, died there June 6, 1815. He was the son of an apothecary, and was destined to become a physician. After continuing the study of medicine for a time, however, he turned his attention to the study of art. Having become familiar with the exact sciences as a preparation for his medical education, he was well prepared to study architecture, and his taste led him to adopt that profession. He became the pupil of Boulée, an architect of some repute for building private residences of a splendid kind, although his name is not connected with the building of any monumental structure. Brongniart became an adept in the same line, and in 1773 commenced a career of success which only ended with his life. At that time few public buildings were erected in Paris, but immense activity was manifested in the construction of palatial private residences. Brongniart constructed the hôtel du petit palais d’Orléans, and the adjoining hôtel of Madame de Montesson. He also built the hôtel Bondy, better known as the hôtel Frascati, in the rue Richelieu. Many of these splendid residences are now being demolished to make room for buildings of a more commercial and productive character. The hôtel Osmond, the hôtel Monaco, and many of the splendid houses on the new boulevards, and the avenues leading from the hôtel des Invalides to the *École militaire* in Paris, were constructed by Brongniart. He also built the convent of the Capuchin monks, with its church, in the chaussée d’Antin, now transformed into the Bourbon college. Being a man of taste as well as science, he was much consulted by rich families, in all their architectural and other improvements in the distributions of their parks and gardens. He designed and laid out the park of Maupertuis, described for its charms in the poem of Delille on “Gardens.” He also made numerous designs for ornaments, vases, and furniture, both for private establishments and for the government. At the age of 88 Brongniart was elected member of the academy of architecture, and he was also the official architect of many chartered companies and public bodies, but it was only toward the end of his career that he was appointed architect of the Bourse and of Père la Chaise.

II. ANTOINE LOUIS, chemist, brother of the preceding, died in Paris, Feb. 24, 1804. He was apothecary to Louis XVI., professor at the college of pharmacy, and afterward professor of chemistry applied to the arts. He was the colleague of the celebrated Fourcroy at the lyceum of the republic, and also at the *jar-*

des plantes, in Paris. During a portion of the revolutionary period, before he obtained his professorship of chemistry, he was apothecary to the army. He wrote much in the journals of science in his day, and published some important papers on chemistry: among others, "An Analytical Table of the Combinations and Decompositions of Different Substances; or, Explanatory Methods of the science" (Paris, 1778). III. ALEXANDRE, chemist and geologist, the son of the architect, born in Paris in 1770, died there in 1847. He was early trained to scientific pursuits, and at the age of 20, on returning from a visit to England, he was occupied in studying the best means of improving the art of enamelling in France. He was afterward engaged in the medical department of the army, and on returning home in 1801, was appointed director of the manufactory of porcelain at Sèvres. In 1807 he composed a treatise on mineralogy, which was a standard work on the subject. He was also appointed professor of mineralogy at the garden of plants, and much of his time was spent in the study of zoology, with Cuvier and other celebrated naturalists. He undertook the classification of reptiles, and described the trilobites, a very singular family of fossil crustaceans, differing widely from all the living forms of the present day. Cuvier was then occupied in the study of the fossil remains of extinct types, and Brongniart assisted him greatly by exploring and explaining the geological formation of Montmartre and its fossil treasures; their joint labors being published in the celebrated *Description géologique des environs de Paris*. He travelled over the northern and southern parts of Europe, exploring every region; and was the first to give the world an accurate chronological account of the different superficial strata of the earth's crust in various parts of the globe. He was elected member of the academy of sciences in 1815, and was connected with the progress of the physical sciences in nearly all their branches during 40 years. In 1845 he published a treatise on the fictile arts (*Traité des arts céramiques*), which is deemed the most perfect work of the kind ever published. IV. ADOLPHE THÉOPHILE, a botanist, son of the preceding, born in Paris, Jan. 14, 1801. He first studied medicine, and received his diploma of doctor of medicine in 1826; but afterward turned his attention to the physiology of plants and antediluvian phytology. In 1834 he was elected a member of the academy of sciences, as successor to Desfontaines; and in 1839 professor of botany at the museum of natural history in Paris. His researches have been various, and his works are numerous.

BRONN, HENRICH GEORG, a German naturalist and professor at the university of Heidelberg, born March 8, 1800, the author of many valuable publications on various branches of natural science. Among his more recent works is one on general zoology (1850); and a 8d and enlarged edition of one of his most important

productions, *Leithen geognostica*, which was originally published in 1834, appeared 1850-53.

BRONNER, JOHANN PHILIPP, a German writer on wines, born in 1792, a resident of Wiesloch, near Heidelberg, the author of 9 distinct treatises on the various wines of Europe, travelled extensively in order to familiarize himself with the best methods of cultivating the vines, and holds the position of councillor on matters of agriculture to the grand duke of Baden. He possesses a remarkable collection of the different specimens of grapes, one of which is known under the name of the Bronner grape.

BRONTË, a town of Sicily, in the province of Catania, near the western base of Mt. Etna. It has a number of churches, convents, a seminary, manufactures of woollen and paper, and trade in wine, oil, silk, grain, and fruits. In 1799 the Neapolitan government conferred the title of duke of Brontë, with a revenue of about \$18,700 per annum, upon Lord Nelson. The town suffered much from an earthquake in 1832. Pop. 2,960.

BRONTË, CHARLOTTE, an English novelist, the 8d in a family of 6 children, all daughters but one, born at Thornton, Yorkshire, April 21, 1816, died at Haworth, March 31, 1855. Her father, the Rev. Patrick Brontë, was a native of Ireland; at the age of 25 he entered St. John's college, Cambridge; took his degree nearly 4 years after; was ordained to a charge in Essex; removed into Yorkshire and held for 5 years the curacy of Harrogate, where, in 1812, he wooed and married a small, delicate, plain woman, named Maria Branwell. Soon after the birth of his 3d daughter, he became curate of Thornton church, and, in 1820, minister of Haworth, where, the next year, he buried his wife. He was a kind, earnest, upright man, uniting much strength of character with an Irish inflammability of temper, subject to fits of intense wrath, which, however, when he could not hold in, he had a strange way of venting on inanimate objects, and always managed its explosions so that none should suffer by them. From his narrow means and high spirit, the little motherless flock were early inured to industry and self-denial; while, by the habits and circumstances of the place, they were in a remarkable degree cut off from the ordinary delights of childhood, and shut up to such as they could find or make among themselves. Their plainness of living set them almost from the cradle, to a course of high thinking; even their childish prattle was of public affairs and public characters; theology, politics, literature, arguments of state, of war, of ethics, of art, were the material of their fire-side sports and recreations. In 1824, Charlotte and 8 of her sisters, Maria, Elizabeth, and Emily, were put to a school at a place called Cowan's Bridge. The school had been lately established by a wealthy and benevolent clergyman, with a view to provide instruction for the daughters of clergymen of limited means. The situation proved to be unhealthy; the school

was in some respects not well managed; the founder, who also exercised the chief control, was so anxious, and so unwise in his anxiety, to make the pupils good, that he did not take sufficient care to make them happy. What with scant supplies, villanous cookery, and hard discipline, the poor girls suffered much. In the spring of 1825, a fever invaded the school, and laid its hand on many of the inmates. The Brontës escaped its touch, but the health of the two elder was so far impaired in other ways that they had to be taken home; and both of them died in the course of the summer. The bitter experiences of the place sank deep into the mind of Charlotte; their influence lives more or less in all her writings, but especially in the sombre fascination which broods over the pages of "Jane Eyre," the recollections of the school being largely drawn upon for the incidents and characters of that remarkable novel. In the autumn of 1825, Charlotte and Emily left the school, and for several years lived at home. Charlotte was now the oldest of the children, and her tendencies to a premature womanhood were much strengthened by the care which it became her duty to exercise over the younger members of the family. During these years, she seems to have spent much of her time in a severe, though self-imposed apprenticeship at writing, and the results survive in a large collection of manuscripts, written in a microscopic hand, and revealing such a development of mind, such a compass and facility of thought, as was perhaps never before witnessed in a girl of her age. In the winter of 1831, she was again put to school at a place called Roe Head, where she continued nearly 2 years. The teacher was a kind, motherly person, named Wooler. Here she was free from discomforts, save what grew from her intense craving for knowledge, the bitter recollections she brought to the place, and the tinge of despondency which seems to have been partly complexional with her; while her quick and powerful mind, her patient energy of character, her staid yet tender carriage, her affectionate and helpful temper, won her the respect of all, and settled her in some warm and lasting friendships. Of play, even at that early age, she seemed incapable; she was demure, tongue-tied with thought, intensely studious; often confounded her schoolmates by knowing things quite out of their range; sometimes exercised her genius in telling stories for their entertainment, when her fund of original and startling invention would transport the eager listeners with ecstasies of wonder and fear. In 1835, she reëntered the school as a teacher, and took her sister Emily along with her as a pupil; but it soon became evident that Emily could not live away from home, and so she changed places with the youngest sister, Anne. Charlotte did not take teaching easy; it was her nature, in whatever she did, to work with all her might; and the labor wore upon her health and spirits till she was forced to give it up. In 1838, we find her spending another

happy and healthful season at home, turning her mind to all the offices of a daughter and elder sister, devoted, diligent, self-sacrificing, brave-hearted, apt-handed, ever resolute to make her own way in the world, unwearied in helping those to whom she was knit by ties of love and duty. The next year, she tried the work of governess, but fell into a hard, purse-proud, uncongenial family, with a set of pampered and turbulent children, from whose patronage she soon withdrew, shattered in spirits and deeply disgusted. In 1841, she went out again as governess; this time her situation was much pleasanter; she met with kind and appreciative treatment; but the occupation was against the whole grain of her nature, a continual stifling of faculties and impulses strong as life. Her next plan was, that she and her two sisters should undertake an independent school, whereby they might maintain themselves together, and at the same time have leisure to try their hands at literary work. But they did not deem themselves sufficiently accomplished for such a task; and, as they could not afford the expense of a good English school, they hit upon the project of spending some time in a school on the continent, to qualify themselves for teaching. The result was, that Charlotte and Emily went to Brussels in the winter of 1842. At the end of 6 months, they were induced to prolong their stay, by an invitation to take part in the teaching, and thus earn something toward paying their way. Emily did not remain quite a year; Charlotte spent nearly 2 years there, intensely active in all her faculties of mind, building herself up with solid and varied acquirements, comfortable in her associations, and cheerful in the intercourse of kind friends. In the summer of 1844, the arrangements were made for opening a school at Haworth; they sent out circulars, received many assurances of good wishes to the enterprise, waited month after month, but still no pupils came; and at last they despaired of success. During this period, and thenceforth, the sisters remained at home, dividing their time between household cares and literary labors. In 1846, they put forth a joint volume of poems, under the names of "Currer, Ellis, and Acton Bell." The publication was at their own risk; the work met with little favor; the sales were very limited. Notwithstanding this failure, they did not yet despair of getting the public ear. They wrote each a prose tale, hoping the three would be published together. These were, "The Professor," by Charlotte; "Wuthering Heights," by Emily; and "Agnes Grey," by Anne; the names assumed in the volume of poems being still retained. The latter 2 found a publisher; the first was everywhere refused, nor did it get before the public till since the author's death. It was under the weight of all this discouragement that the great, brave, noble little woman undertook the composition of "Jane Eyre," which was published in Oct. 1847. The work was not to be

resisted; it rapidly made its way to a decided triumph; it was translated into most European languages, and dramatized in England and also in Germany under the title of the "Orphan of Lowood." Even her father knew nothing of what she had done, till she put the printed book into his hand, and told him it was her own work. This great and hard-won success was followed by afflictions as great. Emily died Dec. 19, 1848. The attachment of the 2 sisters was inexpressibly tender and deep. Charlotte's tears were scarce dry before they had to flow afresh. Anne, the youngest of this remarkable trio, in less than 6 months, followed Emily to the grave, May 28, 1849; her 2d novel, "The Tenant of Wildfell Hall," having been published the previous year. Miss Brontë's 2d novel, "Shirley," was given to the public in Oct. 1849. She took great pains with the work; still it hardly made good the expectations raised by "Jane Eyre." From the large use she made of local manners and traditions, the secret of the authorship soon transpired. The result was, she visited London; took her place among the literary stars of the time; underwent, without harm, the pains and perils of lionizing in the metropolis. She looked on life, and all its shams and fripperies, with the keen and earnest eye of simple truth; its vanities could not cheat her, and her fierce struggles with the untowardness of fortune had left her no time to cultivate the arts of self-deception. Her "Villette," after being a long while on the stocks, but only worked at from time to time, in the intervals of a care-worn life and a faltering health, was at last finished and launched in the autumn of 1852. This story seems to have taken more or less of its shape and texture from the author's recollections of Brussels. In strength and originality of characterization it does not equal Shirley, but is perhaps more interesting and attractive as a whole. It met with almost unbounded applause.—About this time, Miss Brontë was surprised with a declaration of love from the Rev. Mr. Nicholls, her father's curate, who had known her long. His affection had nothing of flash about it; it was the slow and silent growth of years; it was deep, ardent, and tender. Her father, though having no objections to the man, objected to the match. She acquiesced in his judgment, and Mr. Nicholls resigned his curacy. It seems that by the spring of 1854, Mr. Brontë came to view the matter in a different light; an engagement was formed, Mr. Nicholls resumed the curacy, and the marriage took place the June following. The newly-married pair lived at the parsonage; to comfort and brighten her father's old age, was their joint service. The poor woman had at last reached a season of rest and joy; but the cup was to be snatched from her thirsty lip, ere she had more than fairly tasted of its sweetness.—A biography of this extraordinary woman has been given to the public by her friend, Mrs. Gaskell. It is a tale full of solemn and pathetic attraction. It is evident

enough that for her high achievements Miss Brontë was nowise indebted to any advantages commonly withheld from her sex. Toil and pain and sorrow were her portion; her life was one long wrestling match with the stubborn unkindness of circumstances. The only help she had was in being left to work her way unhelped; if she owed her success to any thing external, it was the having to overcome mountains of discouragement. And in all the relations of life she discovered a heart framed of the purest ore of womanhood; to the proper ministries of the daughter, the sister, the wife, the friend, the Christian, she was thoroughly faithful and true. Her great gifts of genius challenge our admiration; which it is sweet to give, because at the same time her hard lot challenges our pity, and her womanly virtues, our reverence. The secret of her power seems to lie in a prodigious faculty of labor, energized and directed by the heart and conscience of the woman. As an author, she touches various springs of interest with a bold, firm, masterly hand. Sterling good sense is the main staple of her stock in trade. Her mode of conceiving and working out character is eminently original and profound; while she anatomizes the human heart with the stern, unfaltering firmness of truth. Of humor she has very little, and that little is mainly of the caustic and pungent sort. She has a piercing and pregnant wit, which, however, rarely appears as a prominent, never as a separate element in her works. The subtler spells of fancy seem always amenable to her call; images of the ghastly, the dream-like, the shadowy, the mysterious, rise up at her bidding; the lonely raptures of pensive and solitary musing throng upon us in her scenes, and steal us from ourselves; indeed, whatever is adapted to work on the moral and imaginative forces, is strangely responsive to her invocations. But the great feature of her writing is its muscular intellectuality. Her adventurous plough dares the toughest soils, and forces its way through, upturning them from the bottom. Nor does she ever confound her sensations with her perceptions; hence we never catch her tormenting language in a spasmodic effort to translate the darkness of the one into the light of the other. The result of all which is, that her works have the solid, legitimate, durable interest of truth; she looks life square in the face, and depicts it fearlessly, as if she scorned all the illusive vanities of art.

BRONZE, an alloy consisting of proportions of copper and tin, which vary according to the purpose desired, to which lead, zinc, and silver also, are sometimes added for the purpose of giving greater brilliancy to the compound, or rendering it more fusible, the zinc being introduced in the form of brass. In some of the modern bronzes, brass is used instead of tin; these are then nothing more than brass, consisting of very large proportions of copper.

Speculum metal of reflecting telescopes is a bronze composition, which is the whitest, hardest, most brilliant, and brittle of all the bronze alloys. It consists of 100 parts tin and 215 of copper. Bell-metal is a bronze, which is usually composed of 78 parts copper and 22 of tin. This is also the composition of the Chinese gongas, which are forged under the hammer, the alloy being rendered malleable, after casting, by plunging it at a cherry-red heat into cold water; the plate is kept in shape by confining it between two disks of iron. Cannon metal consists of 90 to 91 parts in 100 of copper, and the rest of tin. The strength of this compound is stated by Dr. Thomson to be $\frac{1}{2}$ that of malleable iron. Antique bronze consisted of copper 87-88, and tin 12-18 parts in 100; there being no zinc, it was distinct from brass. The best French bronze consists of copper 91, tin 2, zinc 6, and lead 1. In combining the metals to produce the best alloys, the objects to be attained are the most perfect chemical union of the ingredients, with the production of a fusible compound, that shall easily flow into and retain the form of the minutest parts of the mould. Unless this chemical combination takes place, a separation of the metals is liable to occur during the cooling, as was noticed during the casting of the column of the Place Vendôme in Paris, mentioned in the article ALLOY. The difficulty of retaining the compound of the same composition is also increased by the tendency of the ingredients to oxidize when in the melted state—the tin more rapidly than the copper. The effect of this is not only to change the proportions of the metals, but also to introduce particles of the oxides, which do not combine with the rest, but produce spots and stains upon the surface of the casting. Tin has the effect of rendering the alloy harder and more fusible, and less liable to be affected by oxidation. The dark olive hue which bronze acquires by exposure, is hastened by the application of oxidizing washes, and different shades may be given according to the chemical qualities of the wash employed. Some extract the tin from the surface, and leave the copper in excess, and others remove the copper and leave the tin most prominent.—Among the ancient Greeks, Romans, and Egyptians, the manufacture of bronze articles was very extensively carried on. Their taste for statuary in this material was cultivated to a degree not attained by the moderns. The wealth of some cities was estimated by the number of their statues. In Athens alone no less than 8,000 statues have been found, and in Rhodes, Olympia, and Delphi many more. The famous colossuses were cast of this alloy. The names of many of the ancient artists are still celebrated, and their groups of statuary continue to be our models. The alloy was employed by them for purposes to which we apply the harder metals, as in some periods for their arms and armor, medals, and even their surgical instruments, a set of which was discovered

at Pompeii. By them it was regarded as a sacred metal, and endowed with mysterious powers of driving away evil spirits. The laws were inscribed on tables of bronze, and upon bronze coins alone were placed the words *moneta sacra*. The Phœnicians were the first known workers of it; they made it into plates, which were nailed together; and they also cast it solid, and cored. The Egyptians appear to have had the art of hardening it; as a chisel of bronze was found in one of their quarries, which had apparently been used for cutting porphyry, the marks of the chisel, and trace of the metal being left in the stone. Its temper, however, had disappeared, and its edge, when applied to the rock, was immediately turned. Had they the art of softening the rock, or of hardening the alloy? The Athenian sculptor, Myron, employed it of a pale color and unknown composition, in the 5th century. The Corinthian bronze is supposed to have been suggested by the accidental fusing of metals at the burning of Corinth, 146 B. C. It was of 8 colors, white, yellow, and the last not known. The antique liver-colored cinque cents, and the Florentine bronze, are of the same shade, approaching a dull reddish brown.—The operation of casting bronze statues requires no little skill and experience. Large figures are usually cast in several pieces, which are afterward fitted together. The mould is prepared of a mixture of clay and sand, which receives its shape from the impress of a waxen figure of the exact form desired. The preparation of wax, which should be full an inch thick, is melted out as the mould is heated, dried and hardened. If the article is to be cast in one piece, the different parts of the mould are accurately fitted together, and many little channels are opened through its external part, to admit the liquid metal into all its portions. Bronze casting has been successfully practised in this country at several establishments. That most noted for statues, ornaments, and cannon, is the foundry of the Messrs. Ames, at Chicopee, Mass. The equestrian statue of Washington in Union square, New York, is one of their most successful productions.

BRONZING, the process of covering articles of wood, clay, plaster, metals, ivory, &c., with compositions which give to them the appearance of bronze. These compositions vary in their ingredients, and the process also, with the articles to be coated. An application is first made of size or oil-varnish, into which when nearly dry a metallic powder is rubbed, or this may be previously mixed with the varnish. This powder is most commonly a preparation called gold powder, prepared as follows: Gold leaf is ground together with honey upon a stone. When thoroughly mixed, and the particles of gold completely reduced, the preparation is stirred up in water, and washed until the honey is entirely removed. The gold which settles is then

collected upon filtering paper and dried. Another variety of powder, called *aurum mosaicum*, or *musivum*, is prepared in the following manner: A pound of tin, melted in a crucible, is amalgamated with half its weight of pure mercury. When the amalgam is cold, it is reduced to powder, and ground with $\frac{1}{4}$ pound of sal ammoniac and 7 ounces of sulphur. On subliming this mixture in a matrass, the tin remains at the bottom of the vessel in a flaky golden powder, which is the *aurum mosaicum*. A shade of red is given to this when desired, by adding a small portion of red lead. Copper powder is obtained for the same purpose by the precipitation of the metal from its solution in nitric or sulphuric acid, by means of pieces of metallic iron. The copper deposits itself upon these, from which it may be brushed off in powder, care being taken to exclude it from the action of the air, as it is washed in water, or better in alcohol. It is used either alone or mixed with pulverized bone ash. The preparation called gold size is also used in bronzing. It is made by boiling 4 ounces of powdered gum animi and a pound of linseed oil, the gum being gradually added, and stirred into the oil, while this is heated. The boiling is continued till the mixture becomes thicker than tar. This is then to be strained through a coarse cloth. When applied, vermilion is added to render it opaque, and a convenient consistency is given to it with oil of turpentine. After being applied, it is allowed to dry very nearly, and when it has become sufficiently hard, the powder selected is rubbed over the work with a piece of soft leather wrapped round the finger; or the application is better made with a soft camel's hair pencil, with which, when quite dry, the loose powder is brushed away. If gold size is not to be used, the powders may be mixed in gum-water, and laid on with a brush.—Bronzing and browning gun barrels, and other articles of iron, is effected by first thoroughly rusting the surface by an application of chloride of antimony, mixed with olive oil, and rubbed upon the iron slightly heated. The operation is hastened by subsequent rubbing with dilute nitric acid. This, or dilute muriatic acid, is sometimes used instead of the chloride of antimony. The barrel is then well cleaned, washed with water, dried, and finally polished with a steel burnisher, or rubbed with wax, or varnished with a very weak solution of shell-lac and alcohol. Various other processes are also in use for this purpose.—Different processes are also given for bronzing plaster casts, of which the following appears to be one of the most easily applied: A mixture of sulphate of iron and sulphate of copper in solution, is added to a solution in water of palm-oil soap. Different shades of the brownish green precipitate produced are given by varying the proportion of the sulphates. This precipitate is to be washed and dried, then redissolved in a varnish of linseed oil and wax. The plaster casts, being previously heated, are to be coated with the varnish, which will give

them the appearance of bronze.—Another process of bronzing consists in depositing, by the galvanic battery, upon metallic articles, coatings of the bronze alloy of any desired thickness. The article to be coated is placed in the required metallic solution, and connected with the negative pole of the battery, and a plate of bronze metal with the positive decomposing pole. It is said that rough cast iron may be thus coated and made to assume the appearance of the finest bronzes. As patented by M. de la Salzedé of Paris, in 1847, the process consists in the use of a solution of 5,000 parts by weight of distilled water, 610 parts of subcarbonate of potash, 25 parts of chloride of copper, 48 parts of sulphate of zinc, 805 parts of nitrate of ammonia, and 12 parts of cyanide of potassium. The cyanide of potassium is dissolved by itself in about 120 parts of distilled water taken from the above quantity. The other salts above mentioned (except the nitrate of ammonia) are then added to the remainder of the water, and the mixture is heated to from 144° to 173° F.; when they are entirely dissolved, the nitrate of ammonia is added, and the solution allowed to stand 24 hours; the solution of the cyanide of potassium is then added, and the whole allowed to stand until it is quite clear; the clear solution is then to be drawn off with a siphon, and put in the decomposing trough. The subject to be covered with brass is then to be attached to the zinc pole of a battery, and to the other pole of the battery a large plate of brass is to be attached, which must be also immersed in the solution. The battery must, the patentee says, be a powerful one; he advises to use Bunsen's or Grove's. When it is intended to bronze, instead of the 48 parts of sulphate of zinc, 25 parts of chloride of tin must be used; the other ingredients are to remain the same. Another solution recommended by the patentee consists of 5,000 parts of distilled water, 15 parts of chloride of copper, 85 parts of sulphate of zinc, 500 parts of subcarbonate of potash, and 50 parts of cyanide of potassium, for brassing; and for bronzing, 12 parts of chloride of tin, instead of the 85 parts of sulphate of zinc. This solution, the patentee says, must be used at a temperature of from 25° to 86° centigrade. The proportions may be varied within certain limits. It would seem that the deposit may also be produced without the use of the battery at all by introducing the articles in solution of acetate of copper, which gives the effect and protection of bronze. Other methods of precipitating brass upon metallic surfaces are noticed under the head, BRASS.

BRONZINO, ANGELO, a Florentine painter, born at the beginning, died at the end of the 16th century. He executed several works in imitation of Michel Angelo, of which the best are his *Pieta* in the church of Santa Maria, and his *Limbo* in that of Santa Croce, in Florence. He excelled also as a portrait painter.

BROOCH, a breast ornament worn by ladies, secured by a jointer pin and loop, of various

forms and materials. When decorated with gems, the brooch is worn only in full dress. In former times the brooch was used as an ornament by men, for fastening the vest or shirt-bosom, and is still common in the Highlands of Scotland.

BROOKE, a county of Virginia, the northernmost but one of the 4 counties that make up the narrow strip of land between Pennsylvania and Ohio, called the Panhandle. Area, 75 sq. m. It is watered by small creeks, that run into the Ohio, its western boundary; its soil is very fertile, and its surface hilly. Corn and wool are its great staples. Of the latter, it produced, in 1850, 128,572 lbs., being more than was produced in any other county in the state. The other productions were, 150,571 bushels of Indian corn, and 65,516 of wheat. There were 5 corn and flour mills, 4 saw mills, 2 paper mills, 1 iron foundry, 1 cotton, 1 woollen, and 1 glass factory, 2 newspaper offices, and 11 churches. Its real estate was valued in 1850 at \$1,514,504; in 1857 at \$1,148,172, showing a decrease of 22 per cent. Capital, Wellsburg. Pop. in 1850, 5,054, of whom 81 were slaves and 100 free colored.

BROOKE, FRANCES, English authoress, a daughter of the Rev. Mr. Moore, and wife of the Rev. John Brooke, died in 1789. She wrote sonnets, translations, novels, and tragedies. Her best work, the "History of Emily Montagu" (1769), contains fine descriptions of the scenery of Canada, where she resided for some time. Of her dramatic pieces, "Rosina," acted at Covent Garden in 1782, was the most successful.

BROOKE. I. FRANCIS J., an American magistrate, born near Fredericksburg, Va., Aug. 27, 1768, died March 8, 1851. He was an officer of the revolution, and an intimate friend of Washington. At 16 he was appointed lieutenant in Gen. Harrison's regiment of artillery, and served his first campaign under Lafayette. He afterward joined the army of Gen. Greene (his twin brother, John, accompanying him, and holding the same rank in the army), and was at Charleston at the end of the war. After studying medicine a short time, he undertook the study of law, and was admitted to the bar in 1788. He was several times elected to the house of delegates and senate of his native state. While speaker of the latter in 1804, he was elected a judge of the general court. In 1811 he was elected to the court of appeals, and again in 1831, under the new constitution, and officiated in this capacity for the rest of his life. II. FRANCIS J., son of the preceding, joined the army in 1822, was made adjutant April, 1833, first lieutenant May, 1835, fell Dec. 25, 1837, in the battle of Okeechobee, Fla., in which he had taken a distinguished part. III. GEORGE MERZKE, uncle of the foregoing, and brother of the judge, died March 9, 1851, at San Antonio, Texas. Having entered the United States military service in 1808, he was promoted to the rank of lieutenant-colonel, Aug. 15, 1814, consequent upon his brave conduct in the defence of Fort Erie, in which he

was wounded; and having exhibited the same gallantry in the war with Mexico, he was made major-general 3 years before his death, which occurred in Texas while he was in command of the 8th military department.

BROOKE, HENRY, an Irish novelist and dramatist, born at Rantavan, in 1708, died in Dublin, Oct. 10, 1783. A poem, "Universal Beauty," heralded by the praise of Pope, introduced him to Swift and others, including the prince of Wales (father of George III.), to support whom, in his antagonist position to his father, Mr. Brooke is said to have written, in 1738, the tragedy of "Gustavus Vasa." The licenser of plays, believing that the character of a tyrant minister was directed against Sir Robert Walpole, forbade its performance after it had been rehearsed at Drury lane theatre, but the play was published, and the author gained £1,000 by its sale. In 1745, when the rebellion broke out in Scotland, he wrote the "Farmer's Letters," which were believed to have greatly influenced the Irish against taking up arms for the Stuarts. An opera, called "Jack the Giant Killer," which was to have been produced soon after the close of the rebellion, was prohibited by the Irish government, who feared that it might be taken as a reflection on the duke of Cumberland, but he gained £800 by its publication; at the same time, Mr. Brooke's loyal "Letters" were paid for by his being appointed barrackmaster of Mullingar by Lord Chesterfield, the viceroy. In 1752, his tragedy, "The Earl of Essex," was successfully played in Dublin, and in 1762 at Drury lane theatre. His novel entitled the "Fool of Quality" has had considerable celebrity. He also translated a part of Tasso's *Gerusalemme Liberata*.

BROOKE, SIR JAMES, rajah of Sarawak, born in 1808 at Bandel, in Zillah Hoogly, Bengal. His father, having taken up his residence at Bath, England, procured for him a cadetship in the East India service; but receiving a severe gun-shot wound in the chest at the storming of a stockade in the Burmese war, he was forced to return to England. At this time he travelled on the continent, and found on his return to India, in 1830, that he had exceeded his leave of absence, and forfeited his appointment. He resigned, and sailed from Calcutta to China. On this voyage he saw, for the first time, the islands of the Indian archipelago, lying neglected, and almost unknown. The spirit of adventure, the hope of adding another empire to the conquests of civilization, and of suppressing the system of piracy then the scourge of the eastern seas, arose in his mind, and were thenceforth associated with the idea of obtaining a foothold among these beautiful islands. He returned to England, and purchased a yacht out of the royal squadron, enjoying the same privileges as a man-of-war. After disciplining his crew, some 20 in number, by a cruise in the Mediterranean, he sailed Oct. 27, 1838, for the East. On his arrival at Sarawak, on the island of Borneo, he found the country

in a state of warfare, the Dyaks, the inhabitants of Sarawak, blockaded from the interior, and exposed to constant and murderous descents, and with their rajah, Muda Hassim, carrying on a losing contest. In return for his assistance, the rajah offered to make him his successor. The proposal was accepted without much hesitation. Mr. Brooke took the command of the rajah's army, and after they were once brought into the presence of the hostile forces, a few discharges from the European guns decided the fortune of the day. Established in authority over Sarawak, he endeavored to accustom the inhabitants to a regular government and regular pursuits, and to turn them from piracy and local war to agriculture and commerce. He always acted with vigor, and has succeeded to an extraordinary degree. In conjunction with the English naval commanders in those waters, he attacked, routed, and extirpated the Malay pirates of the archipelago. The killing of the pirates was paid for by the English commanders, to their boats' crews and to others, at so much a head, and under this system of stipulation to both the English and the native forces under the lead of Mr. Brooke, the enemy melted rapidly away. At this time he acted as an ally, apparently independent of the English, although he was entitled to the dignity of rajah by appointment from the sultan of Borneo; but returning to England, in 1847, in order to establish his position, his conduct was severely criticized. He had been successful, however; he was already a power to be courted or to be feared, and according to the laws of war and the character of the enemy against which it had been carried on, his acts were not more reprehensible than those of others. In spite of the murmurs he became the hero of the hour, was knighted, his position recognized by the government, and he received the title of governor of Labuan, at a salary of £2,000, and a staff of subordinate officers under British pay. From this office, however, he was removed after a subsequent visit to England. His course has been plainly of advantage to the uncivilized people over which he presides, and, at the same time, has contributed to the extension of British influence. He has compiled a code of laws, opened trade, made roads, coined money, raised a regular revenue, and provided for the security of property. The Dyaks are attached to him for his labors in their behalf, for his sense of justice, and the character which distinguishes him as a man born to govern. He is also said, notwithstanding the cares of government, to indulge in the pleasures of a literary and classical taste. Portions of his journals have been published, as also the "Private Letters of Sir James Brooke, K. C. B., from 1838 to the present time, edited by J. C. Temple, Esq.," 3 vols., London, 1853. The attachment of his people was proved upon the breaking out of the war of England with China in 1857, when his residence was suddenly attacked by an army of 4,000 Chinese, and he escaped

only by swimming the river entirely destitute. The Dyaks rallied to his support, and in a short time he descended upon the Chinese, and overthrew them with a loss of half their number.

BROOKES, BARTHOLOMÆUS HEINRICH, a German poet and lawyer, born at Lübeck in 1680, died in 1747. He lived at Hamburg, and was made senator and aulic councillor, with the title of count palatine. His volume of moral poems, entitled "Earthly Contentment in God," is still highly esteemed in Germany. He translated Pope's "Essay on Man" into German.

BROOKES, JOSHUA, an English anatomist, born in 1701, died in 1838. He taught anatomy and physiology for 40 years. His anatomical museum was admirably arranged, and cost him not less than \$150,000.

BROOKLINE, a township of Norfolk co., Mass., 5 miles S. W. of Boston, of which it is a suburban appendage. Almost the whole extent of the township is occupied by beautiful country residences, and their grounds built and laid out with various and admirable taste, and affording a charming maze of walks and drives. There are 6 churches, and a number of excellent schools; pop. in 1855, 3,472.

BROOKLYN, the shire town of Kings county, New York, is a city and seaport on the west end of Long island, opposite New York city, and separated from it by the East river, an arm of the sea connecting the bay of New York with Long island sound. Lat. at the navy yard, 40° 41' 50" N., long. 73° 59' 30" W. The exterior line of the city measures 23 miles, embracing an area of 16,000 acres. It is bounded N. by Newtown creek, S. by Flatbush and New Utrecht, E. by Queens county, and W. by the East river and bay of New York. Its extreme length from north to south is about 7½ miles, and its greatest breadth 5 miles; owing to the irregularity of the exterior line, however, the average breadth is only about 8¼ miles. The western boundary of the city affords 8 miles of water front. Newtown creek is navigable for a mile or two from the East river for vessels of light draught; it has been contemplated for some time to increase water communication, by canals, from commodious basins in Newtown creek and Wallabout and Gowanus bays.—Brooklyn was first settled in 1625, by a band of Walloons, brought out as agriculturists by the Dutch West India company, who established themselves near the site where the navy yard now stands, calling their place of settlement Waalbogt (Walloons' bay), from which the present term Wallabout is derived. The name subsequently conferred upon the town, by the Dutch, was Breuckelen, from a village in Holland. The soil was originally claimed by the Canarsee Indians, a large tribe which inhabited the southern part of what is now Kings co., from whom the Dutch government procured the title. The first European settler in the town is generally supposed to have been George Jansen de Rapelje, at the Waalbogt, during the directorship of Peter

Minuet, and the first white child born on the island (June 9, 1625) was his daughter, Sarah Rapelje. The Indians are said to have conveyed to her a large quantity of land near the Wallabout. Gov. Minuet, of New Amsterdam, in the course of a visit to Rapelje's house, soon after the child's birth, promised the good wife a milch cow as soon as the ship came from Holland. The promised cow arrived, and was sent over, being the first brought to Long island. The father of Sarah was followed to America by 2 brothers, one of whom received a patent for 100 acres of land near Gravesend, Aug. 9, 1639, and the other a similar patent from Gov. Kieft, May 27, 1643. By the Dutch records it appears that the renowned Wouter van Twiller owned some of the lands at Red Hook, in 1634. A deed for land by Gov. Kieft to Abraham Rycken, in 1638, is the earliest known, and the oldest recorded grant is to Thomas Besker in 1639. In 1641, in order to strengthen their claim to Long island, the Dutch West India company consented that the English should settle upon it, on condition of their taking the oath of allegiance to the states-general and the company. Grants were made by Gov. Kieft to divers individuals, between 1642 and 1647, of all lands from Red Hook point to Wallabout bay, and it is believed that Gov. Stuyvesant, in 1657, granted a general patent of the town. Gov. Richard Nicolls, Oct. 18, 1667, granted a full and ample patent to Jan Everts, Jan Damen, Albert Cornelisson, Paulus Veerbeek, Michael Evey, Thomas Lamberta, Teunis Guisbert Bogart, and Joris Jacobson, as patentees on behalf of the freeholders and inhabitants of the town of Breuckelen, their heirs, successors, and assigns, of all land acquired, or to be purchased or acquired, on behalf of the town, from the Indians or others. This patent was confirmed by Gov. Dongan in 1686, in consideration of an annual quit-rent of 20 bushels of good merchantable wheat. This quit-rent, or its equivalent, continued to be paid by the town as late as 1786.—Soon after the settlement, the Dutch government appointed a "superintendent" to preserve the peace, and regulate the police of the community. Some years later this office was abolished, and the offices of schout, secretary, and assessor created in its stead. These officers were also appointed by the governor. The inhabitants suffered greatly under the arbitrary exercise of power on the part of the government, and after frequently remonstrating against their exclusion from all share in the legislation of the colony, met together with the delegates from the other towns under the Dutch rule, at New Amsterdam, Nov. 26, 1663, to obtain redress for their grievances. The governor, however, sent them home without an answer; but he and his council entered one on the minutes denying the right of Brooklyn, Flatlands, and Flatbush to send deputies, although they had previously been sent at his request. The next month the convention renewed their efforts, de-

claring "that if they could not obtain a recognition of their rights from the governor and council, they would be obliged to appeal to their superiors, the states-general." The governor, annoyed at their persistence, and probably enraged at their threat, angrily dissolved the convention, and ordered the delegates to go home.—For 84 years after their settlement, Brooklyn and the adjoining towns were without a place of worship. In Dec. 1654, Gov. Stuyvesant gave orders for the erection of a church in the neighboring town of Midwout, or Flatbush, "60 feet long, 38 wide, and 14 in height below the beams." Early in the succeeding year he commanded the people of Brooklyn and Amersfort to assist the people of Flatbush in getting timber for the church. This edifice cost 4,637 guilders, to which the governor contributed out of the public funds 400 guilders, and subsequently he added 624 more to release the church from debt. The Rev. Mr. Polhemus was the pastor of this church. Before it was built the people of Kings county worshipped in the city of New Amsterdam, under the Rev. Everardus Bogardus. In 1660 the minister at Flatbush petitioned the governor to have a window placed in his church, which was granted. About this time, too, the people complained that their minister was inattentive to his duties, officiating only once a fortnight, and then only for a quarter of an hour, giving the people a prayer instead of a sermon; whereupon the governor ordered, "that he shall attend more diligently to his work." In 1673 the governor and council ordered the sheriff and constables to maintain the reformed religion to the exclusion of all other sects. The people of Brooklyn soon grew tired of going to Flatbush to church, for we find them in 1659 applying for permission to call a minister for their congregation, assigning as a reason the badness of the road to Flatbush, the difficulty of going to the city, and the old age of the Rev. Mr. Polhemus, and his inability to officiate at Brooklyn. The governor deemed the request reasonable, and referred it to a committee, who reported favorably, and the request was granted. The people thereupon tendered a call to the Rev. Henry Selwyn, otherwise Henricus Selwyns, of Holland, who accepted the same, was approved by the classis of Amsterdam, and set sail for the New Netherlands. He was installed Sept. 3, 1660, in the presence of the fiscal and burgomaster, Kregier, by order of Gov. Stuyvesant. Mr. Selwyn's salary was 600 guilders; but the marriage fees, instead of being his perquisite, appear to have formed part of the income of the church; for on Oct. 29, 1662, he paid to the consistory 78 guilders 10 stivers, the proceeds of 14 marriages at which he had officiated during the year. In 1664 he returned to Holland, and Charles Debevoise, schoolmaster and sexton, was directed to read the prayers and a sermon from some orthodox author every Sabbath, until another minister should be called. The first Dutch church in Brooklyn was erected in 1666; after doing ser-

vice for 40 years, it was taken down and another put up; in 1810 this was taken down, and replaced by a new building; about 25 years later, that proving too small, gave place to the present structure. The Episcopalians had a society in Brooklyn as early as 1787, and in 1795 they dedicated St. Ann's church, a stone building, which, in 1824, was superseded by the present edifice. The first Methodist church was incorporated in 1794; the first Presbyterian and Roman Catholic churches in 1822; and the first Congregational church in 1839. At present the most noteworthy feature of Brooklyn is its churches, from the number of which it has gained the title of the "city of churches." Of religious congregations, there are now (1858) no less than 147, nearly all possessing church edifices, viz.: 15 Baptist, 10 Congregational, 28 Protestant Episcopal, 2 German Lutheran, 1 Methodist Congregational, 22 Methodist Episcopal, 5 Methodist Episcopal (African), 1 Primitive Methodist, 2 Methodist Protestant, 16 Presbyterian, 14 Reformed Dutch, 17 Roman Catholic, 2 Swedenborgian, 4 Unitarian, 8 Universalist, and 11 belonging to no particular denomination. The following census of the churches was taken in 1855:

Churches.	No.	Value of Buildings and Grounds.	Other Real Estate.	No. capable of being seated.	Usual No. attending.	No. of communicants.	Salary of clergy, including use of real estate.
Baptist.....	11	\$955,000	\$5,000	7,085	4,835	2,973	\$12,866
Congregational.....	11	248,000	52,000	9,560	6,245	1,579	16,000
Evangelical Lutheran.....	2	13,000	1,000	750	630	167	1,100
Friends.....	1	13,000	10,000	950	900	270	.....
Jews' Synagogue.....	1	4,000	10,000	70	71	.....	.....
Methodist Episcopal.....	22	817,500	41,000	80,500	11,011	4,705	98,400
Methodist Episcopal (African).....	5	14,000	1,000	8,700	900	298	800
Methodist Protestant.....	2	8,500	.....	800	80	48	.....
Primitive Methodist.....	1	12,000	.....	150	50	8	450
Moravian.....	1	450,000	.....	10,975	6,475	8,568	19,850
Presbyterian (old and new).....	18	430,000	9,000	10,975	6,475	8,568	1,000
Associate Presbyterians.....	1	4,000	.....	350	150	60	1,400
Swedenborgians.....	4	.....	.....	350	350	215	.....
Protestant Episcopal.....	28	590,600	5,500	12,900	8,870	4,049	98,780
Protestant Episcopal (miscellaneous).....	13	297,200	25,500	6,975	3,705	1,477	18,125
Roman Catholic.....	17	383,800	47,000	22,340	26,190	25,620	16,800
Rethel Union.....	15	8,000	.....	850	320	125	500
Unitarian.....	1	125,000	1,000	1,000	1,350	400	8,200
Universalist.....	8	40,500	.....	1,060	1,700	313	.....
	138	\$3,861,900	\$361,300	98,285	80,371	45,398	\$154,995

Brooklyn, during the revolution, was the scene of several memorable events. On Aug. 26, 1776, the battle of Long island was fought. Owing to a gross oversight the Bedford pass was left unguarded, by which Sir Henry Clinton succeeded in turning the flank of the American forces, and defeating them. Out of 5,000 Americans engaged, 2,000 were either killed, wounded, or taken prisoners. In 1778, and for 6 years thereafter, until New York was evacuated, several condemned hulks were moored in the Wallabout, and used for the detention of American seamen captured by the British. It is estimated that 11,500 Americans died on these plague-ships. The shores of the Wallabout were full of dead men's bones, and for many years the tides washed out the ghastly remains from the sand. After some years of agitation, the bones of the martyrs were finally collected together in the year 1808, and laid in a great vault near the navy yard, with very imposing ceremonies. It is supposed that at the close of the revolutionary war, John Rapelje, who during that period was in authority here, and against whom an act of attainder was passed in 1777, by which his large estate was confiscated, and he compelled to leave the country, took with him or destroyed the records of the town, from its settlement to that time. At all events, by whomsoever taken, the records have disappeared.—For many years after its settlement Brooklyn was no more than a straggling hamlet. According to a census taken about 1698, the population of the town numbered 509 persons, viz.: 77 men, 101 women, 240 children, 26 apprentices, and 65 slaves. In 1706 it contained 64 freeholders; 96 years later the number had only increased to 86. The total population of the town in 1800 was 3,298; in 1810 it was 4,402; in 1820 it was 7,175; in 1830 it had reached 15,292; in 1835, the year after its incorporation as a city, 24,810; in 1840 it was 36,238; in 1845 it was 59,574; in 1850 it had grown to 96,850. On Jan. 1, 1855, it was consolidated with the city of Williamsburg and the town of Bushwick (including the village of Greenpoint), under the common name of Brooklyn; old Brooklyn being designated as the western district, and the other portions as the eastern. In that year the population of the entire city was 205,250, and it is now estimated at 280,000.—Williamsburg was founded by Mr. Richard W. Woodhull, who at the beginning of this century bought a tract of land near Bushwick street (now North Second st.), started the first ferry from Grand street to New York, and named the place Williamsburg. It was incorporated as a village in 1827, and as a city in 1851. In 1855 its population was 48,867.—Brooklyn was incorporated as a village in April, 1816, and about the same time the first district school was established. In May, 1820, a daily mail was established to New York. After much opposition from the city of New York, Brooklyn became a chartered city in April, 1834, Mr. George Hall being elected

mayor by the common council. Subsequently the election of mayor was vested in the people. From the period of its incorporation as a city, Brooklyn has grown apace. It is for the most part considerably elevated above tide water, and possesses superior advantages as a place of residence. It is open on all sides to the land and sea breezes, and its wide streets, generally at right angles to each other, afford a free circulation of air. The quiet clean streets, shaded with fine trees, and the comfortable habitations which abound, give it the appearance of a country town rather than a great city. That part of Brooklyn fronting on the East river, south of Fulton street, called the Heights, is 70 feet above the level of the sea, affording a fine view of New York, and the surrounding country.—A few words about the ferries, to which Brooklyn owes so much of her prosperity, may be interesting. Under the Dongan and Montgomerie charters New York city claims jurisdiction over the waters of the North and East rivers to low-water mark, on the Long island and New Jersey shores, as far as her territory extends; hence she owns all the ferry privileges on those rivers. It is difficult to discover when the first ferry was established, but it must have been very soon after the settlement of the town. At an early period a ferry was run from near the foot of Joralemon street to the Brede-graft, now Broad street, New York. In 1698, John Areson, the lessee of the ferry, found that £147 a year was too large a rent, and it was reduced to £140. The ferriage then was 8 stivers in wampum, or a silver twopence, for each person, or if more than one crossed at the same time, half of that amount was charged. A horse or beast was charged 1s. if alone, or 9d. in company. Rip van Dam became lessee of the ferry in 1698 for 7 years, at £165 per annum. The old ferry was kept by Van Winkle and Buskett during the revolution, when 6d. was the ferriage. In the early part of 1813 the corporation of New York proposed to put steamboats on the ferry, in place of the old barges and horse boats, and applied to the legislature for power to raise the ferriage from 2 to 4 cents. The citizens of Brooklyn petitioned the legislature in opposition to the proposed change, setting forth that the corporation of New York derived an annual rental of \$4,725 from the ferries, that the lessees had an income of \$32,000 against \$18,500 expenses, and that a number of wealthy people would engage to build steamboats, and run them for 2 cents a passenger. The law was passed, however, establishing 4 cents ferriage in steamboats, and 2 cents in barges or row boats. On May 10 following, the first steam ferry boat—the “Nassau”—was placed on the old ferry, and made 40 trips a day, occupying from 4 to 8 minutes each time in crossing. This was the only steam ferry boat on the East river for many years; the other boats were propelled by horses or by hand. Finally, in 1826, the common council of New York granted a South ferry, and established a steam ferry from

the foot of Jackson street, Brooklyn, to Walnut street, New York. In the following year a boat was run on Fulton ferry during the night, and a proposition was made to light Fulton street. The South ferry did not go into operation until May 6, 1836. About this time speculation in real estate raged fiercely, and the ferries were much improved to induce New Yorkers to reside in Brooklyn. In 1858 there are no less than 18 ferries, from the rent of which the corporation of New York derives a large income. The ferries of old Brooklyn are from Hamilton avenue, Atlantic (South ferry), Montague, Fulton, Main, and Bridge streets, to Whitehall slip, Wall, Fulton, Roosevelt, and Catharine streets, New York. The most frequented of these are the Fulton and South ferries. For several years the Fulton, South, and Hamilton ferries were run by the Union ferry company, and the others by different parties; but on Dec. 1, 1855, they were all united under the control of that company. Before this time the fare on the most frequented ferries had been one cent, with the privilege of semi-annual commutation; but soon after it was increased to 2 cents without commutation, at which it still continues on all the ferries. The annual rent paid by the Union ferry company is now \$59,000. They own 21 large and commodious boats, averaging 400 tons each, which are kept running during the day at intervals of a few minutes. At night about half of that number are in use, except on the Catharine, Roosevelt, and Wall street ferries, which are stopped toward midnight. The ferries to Williamsburg are from Peck slip, New York, to South Seventh street, Williamsburg, James' slip to South Tenth street, Grand street to South Seventh street and Grand street, and Houston street to Grand street. There is also one from Tenth and Twenty-third streets to Greenpoint avenue. These ferries pay an aggregate rent of \$18,850 a year to the corporation of New York. The general fare is 3 cents; but owing to a rivalry which has recently sprung up between the Peck slip and South Tenth street companies, the ferriage on these 2 routes is now only one cent. The ferries to Williamsburg and Greenpoint employ 14 boats, making trips every few minutes during the day, and on most of the ferries once an hour, or oftener, during the night. At certain seasons of the day the travel is so immense that some of the capacious boats take over nearly 1,000 persons, beside horses and vehicles, at once.—The common schools are committed to the care of a board of education, composed of 45 members, appointed by the common council, to serve 3 years, the term of office of $\frac{1}{3}$ of them expiring each year. In the 19 wards of the city there are 83 school-houses, each containing 2 grammar departments, one for boys and the other for girls, and a primary department. These schools are in charge of a city superintendent, and 28 male and 812 female teachers. There are 8 separate schools for colored children, with 9 colored teachers. In 1857 the number of children taught in the day

schools was 39,295; in the evening schools, 8,789; and in the normal school, 812. The course of instruction in the grammar schools embraces spelling, reading, writing, definitions, grammar, composition, declamation, geography, history, arithmetic, vocal music, the use of the globes, drawing of maps, geometry, trigonometry, natural philosophy, astronomy, and algebra. The teachers are paid from \$125 to \$1,200 per annum. Male principals receive the latter salary; females in the same position are paid \$500 a year. The expenditures for educational purposes in 1857 were: Salaries of teachers, \$108,401 01; salaries of officers, janitors, additions to libraries, school lots and building new houses, repairing, furnishing, &c., \$78,942 06; making a total of \$182,343 07. In the libraries attached to the schools there are at present 32,818 volumes. The Roman Catholics have schools connected with most of their churches, and there are several industrial or ragged schools. In addition to the public schools, there are many first-class private seminaries; foremost among them are the collegiate and polytechnic institute for boys, and the Packer collegiate institute for girls; both of these are incorporated institutions, the former being on a joint stock basis, with a capital of \$75,000; the latter was endowed by a lady named Packer, who gave \$60,000 toward its foundation.—The literary and charitable institutions are numerous. Among the former may be mentioned the Brooklyn Athenæum, at the corner of Clinton and Atlantic streets, which is open day and evening; the building is 90 by 80 feet, and cost \$60,000; it has a fine reading room, with a library of 5,000 volumes, and maintains a course of lectures in the winter. A mercantile library association has recently been formed. The Brooklyn institute and youths' free library is an old and popular institution, which was liberally endowed by Augustus Graham, Esq., and sustains an annual course of lectures. Beside these, there are several other literary societies. The city library has a valuable collection of books. The lyceum, in Washington street, is a fine granite building, with a spacious lecture room. The odeon and Washington hall, in the eastern district, are also fine structures, with ample accommodations for concerts and public meetings. The United States naval lyceum, in the navy yard, founded in 1838, contains a large collection of curiosities and valuable geological and mineralogical cabinets. The city hospital, in Raymond street, near De Kalb avenue, opened 6 years ago, has accommodations for 170 patients. The Long island college hospital, inaugurated in June, 1858, occupies 14 lots on Henry and Amity streets, in a most salubrious situation, and is designed to furnish clinical instruction, after the plan of Guy's hospital. Another excellent charity, the Catholic orphan asylum, just opened, in Bedford near Myrtle avenue, will provide for 114 children; its cost was about \$40,000. The Graham institution, for the relief of aged

and indigent females, has accommodations for 90 persons; it was founded in 1851. The city orphan asylum, dating its incorporation from 1835, provides a home for about 150 poor children. The marine hospital occupies a slightly eminence on the opposite side of Wallabout bay. Sick seamen in the United States service are treated here. There are 3 dispensaries in Brooklyn, one of them in the eastern district, where the poor are furnished with medicine and advice gratis. In addition to these may be noticed the Brooklyn eye and ear infirmary in Pineapple street, the church charity foundation, the Catholic benevolent society, the New England society, the association for improving the condition of the poor, and the children's aid society. Among the religious organizations should be named the Brooklyn city, female, and Williamsburg Bible societies, the Brooklyn tract society, Sabbath school union, and the young men's Christian associations. There are some 20 masonic lodges here, 25 odd fellows' lodges, and several associations of united Americans, sons of temperance, and other benefit societies.—Among the public buildings we will mention the city hall, at the junction of Fulton, Court, and Joralemon streets; it is of white marble in the Ionic style, with 6 columns, supporting the roof of the portico; its dimensions are 162 by 102 feet, and 75 feet in height, comprising 8 stories and a basement; it is surmounted by a dome, the top of which is 153 feet from the ground; its entire cost was about \$300,000. Among the most beautiful buildings are the church of the Pilgrims, of gray stone, its tall tower and spire forming a landmark to mariners as they come up the bay; Grace church, the church of the Holy Trinity (Episcopal), the church of the Restoration, and the Unitarian church, all of brown stone and Gothic architecture.—Fronting Governor's island, and divided from it by Buttermilk channel (which is said to have been fordable for cattle during the revolution, but is now deep enough for the largest ships to sail through), stands the massive Atlantic dock, built by a company, incorporated in 1840, representing a capital of \$1,000,000; the basin has an area of 40.86 acres; the pier line, on Buttermilk channel, is 3,000 feet long; the total wharfage is about 2 miles. A second basin of more than double the capacity of the Atlantic, called the Erie dock, designed to border on Gowanus bay, has been projected. The county jail, on the eastern side of the city, near Fort Greene, is a fine building of freestone, but not so secure as it should be. The navy yard, on the south shore of Wallabout bay, embraces 45 acres of land; a high brick wall surrounds the yard; within it are 2 immense ship houses, and the largest dry dock in the country, built of granite, massive and substantial in structure, at a cost of \$1,000,000; the number of mechanics usually employed in the navy yard is about 1,600. The great thoroughfare of Brooklyn is Fulton street. There is a small park near the navy yard, called the city park;

and the site of Fort Greene is now in process of formation, and is to be called Washington park. Other parks are projected, but no decisive steps have as yet been taken, we believe, toward commencing them. The famous Greenwood cemetery is on Gowanus heights, within the city limits; originally there were but 175 acres enclosed, but since its opening, in 1842, additions have been made, until it now contains 360 acres; between 60,000 and 70,000 interments have been made here. The Cypress Hills cemetery, to the eastward of the city limits, was opened in 1849, and has since been greatly beautified. In the same year the Evergreens cemetery, near Bushwick, was opened. There are other cemeteries of less note lying in and around the city, viz.: the Calvary (Catholic), on Laurel hill; Mount Olivet, near Maspeth; and the Lutheran, the Union, and the Friends' cemeteries.—The consolidated city is divided into 19 wards, electing 19 aldermen, who, with the mayor, compose the city corporation. The act of consolidation allowed the firemen of the 2 districts to retain their distinct organizations. In the western district the department is composed of a chief and 6 assistant engineers, 5 fire commissioners, whose duty it is to try all charges against firemen, 20 engine, 6 hose, 4 hook and ladder, and 1 bucket companies, having 826 enrolled members; the district is divided into 7 fire districts. In the 6 fire districts of the eastern section, the department consists of a chief, 4 assistants, 5 commissioners, 18 engine, 5 hose, 3 hook and ladder, and 1 bucket companies, having 881 enrolled members. The departments are voluntary in their character; but great abuses having crept into the system, the common council recently adopted an ordinance for the enrolment of a paid department. The mayor, doubting their authority to take this step, vetoed the measure.—The project of supplying the city with an abundance of pure water has long been mooted. In 1884 a committee examined the springs at the Wallabout, and reported that \$100,000 would cover all the expenses of a reservoir, steam engine, and 11 miles of pipe, and expressed their conviction that the city could be supplied for \$10,000 a year; but the plan was abandoned, and another is now in course of prosecution. From a chain of ponds and streams on Long island, the water is to be collected, and pumped up into a vast reservoir, whence it will be distributed through 120 miles of pipes, all over the city. The estimated cost is from \$4,500,000 to \$5,000,000. It is stated that 30 miles more of pipes will be needed to cover the city. (For details of this undertaking, see article *AQUEDUCT*.) Brooklyn is deficient in sewerage, but the water commissioners are about to contract for the building of 18 miles of sewers. The system they have decided upon is that of tubular and pipe drains. It is estimated that the cost of a perfect sewer in every street will not exceed \$50 for each house and lot of 25 feet front.—The police of

Brooklyn are comprised within the metropolitan district of New York, Kings, Richmond, and Westchester counties; the force consists of a deputy superintendent, 6 captains, 3 acting captains, 30 sergeants and 200 patrolmen, occupying 6 stations and 3 substations. The 5th brigade of the 2d division New York state militia is mainly composed of the citizens of Brooklyn; Major-Gen. Duryea and Brigadier-Gen. Crooke are in command; it consists of the 18th, 14th, 70th and 72d regiments, and embraces some 40 companies, each of them having armories for drill and the storage of arms.—In 1835 the real and personal property of the city was valued at \$26,890,151; in 1857 it was, according to the city comptroller's report, \$98,976,026. The census of 1855 gives Brooklyn 1,652½ acres of land under cultivation, and 1,196½ acres unimproved. The cash value of the farms was \$4,765,450; of stock, \$554,157; 430½ acres of market gardens gave a product worth \$120,078. There were in that year 511 stone buildings, valued at \$4,980,500; 8,089 of brick, worth \$89,133,750; of wood, 18,562, worth \$39,778,815; making the total number of buildings 22,578, of which no value was assigned to 270. The value of real estate, exclusive of farms, was \$78,843,065, or, including farms and stock, \$79,162,672. During the year 1857, the current expenses of the city were \$2,619,128 20. There are 3 daily, 2 weekly, 1 semi-weekly, and 1 monthly periodicals; 9 banks of issue and discount, with about \$2,500,000 capital; 8 savings banks, and 10 insurance companies, with nearly \$1,000,000 capital. The city railroad company, with a capital of \$1,000,000, own the 5 horse railroads which traverse the city from Fulton and Hamilton av. ferries in all directions. The Long island railroad (capital \$3,000,000) has its terminus near the South ferry. The 8 gas companies, by which the city is lighted, have a capital of nearly \$3,000,000.—Brooklyn contains a large number of important manufactories. Their manufactured products are about in the following proportion yearly: Agricultural implements, \$30,000; brass and copper foundries, \$400,000; silver plating, \$7,000; bronze castings, \$25,000; copper smithing, \$375,000; fish-hooks, \$10,000; furnaces, \$900,000; gold and silver refining, \$224,000; iron pipe, \$350,000; Francis's metallic life-boats, \$80,000 (this is the only manufactory of the kind in America); safes, \$200,000; silver ware, \$60,000; tin and sheet-iron, \$150,000; wire sieves, \$25,000; cotton batting, \$75,000; felt-ing and wadding, \$5,000; dressed flax, \$600,000; fringes and tassels, \$40,000; dressed furs, \$120,000; paper, \$20,000; rope and cordage, \$2,500,000 (there are about 10 rope walks; affording employment to nearly 1,200 persons); twine and net, \$12,000; lager beer, \$750,000. There are some 15 breweries in the upper part of the eastern district, toward Bushwick. The locality in which they are situated is called "New Germany," or "Dutchtown." In this neighborhood on Sundays the people attend

church in the morning, and in the afternoon and evening take their wives and little ones to the numerous beer gardens, where, beside lager beer, gymnastic apparatus, music, and scenic recreations are provided. Drunkenness is not usual among them. There are nearly a dozen distillers and rectifiers, producing the value of \$6,000,000 a year; one establishment alone uses, when in full operation, 8,000 bushels of grain per day. Immense quantities of spirits are shipped direct from Brooklyn to France. Other manufactures are: clocks, \$100,000; pianos, \$25,000; bronze powder, yearly product, \$10,000; soap and candles, \$250,000; camphene, \$2,000,000; chemicals, \$60,000; refined sugar and syrup, \$4,000,000; confectionery, \$20,000; drugs and medicines, \$15,000; dyewood, \$100,000; fish and whale oil, \$200,000; gas, \$462,000; glue, \$150,000; ivory black and bone manure, \$110,000; jappanned cloth, \$200,000; lamp-black, \$4,000; lard oil, \$10,000; refined licorice, \$50,000; malt, \$100,000; oilcloth, \$200,000; linseed and other oil, \$300,000; paints and colors, \$50,000; rosin oil, \$250,000; kerosene, \$200,000; saleratus, \$50,000; starch, \$80,000; vinegar, \$12,000; white lead, \$1,250,000, giving employment to 225 men; whiting, \$60,000; lamps, lanterns, gas fixtures, &c., \$125,000; stoves, \$85,000; steam-engines, \$75,000; ship's blocks, \$70,000; ship building (in 1855), \$945,000, employing 540 men (there are 7 or 8 ship-yards about Greenpoint, beside extensive marine railways, on which large ships are hauled up for repairs); steamboat finishing (same date), \$150,000; tree-nails, \$20,000; thermometers, \$1,500; sashes and blinds, \$120,000; coaches and wagons, \$70,000; registers and ventilators, \$100,000; pumps, \$15,000; steam-do., \$100,000; flour and feed, \$1,000,000; packing boxes, \$25,000; casks and barrels, \$180,000; planed boards, \$500,000; shingles, \$10,000; veneering, \$16,000; glass, \$800,000 (the first, and we believe the only plate glass manufactory in America, was started in Brooklyn in 1855); lime, \$12,000; marble, \$100,000; plaster, \$4,000; porcelain, \$100,000; cut stone, \$250,000; leather, \$50,000; morocco, \$2,000,000; patent leather, \$150,000; bedsteads, \$8,000; cabinet ware, \$350,000; paper hangings, \$30,000; rugs and mats, \$100,000; window shades, \$50,000; gold pens, \$100,000; hats and caps, \$100,000; tobacco and cigars, \$200,000.

BROOKS, CHARLES T., an American author, born in Salem, Mass., June 20, 1818. He was graduated at Harvard college in 1832, and was settled as a Unitarian clergyman, in 1837, in Newport, R. I., where he has ever since remained. Mr. Brooks is an accomplished scholar, and particularly devoted to German literature. He has published a translation of Schiller's "William Tell;" a volume of miscellaneous poems from the German, in the series of "Specimens of Foreign Standard Literature;" a translation of Schiller's "Homage

to the Arts," &c.; "German Lyrics;" "Songs of the Field and Flood," and during the last year, an admirable translation of Goethe's Faust.

BROOKS, ERASTUS, an American journalist, junior editor and proprietor of the "New York Express" born in Portland, Me., Jan. 31, 1815. His father having perished at sea near the close of 1814, at 8 years of age he was sent to Boston to earn his own living, and was employed in a grocer's store, gaining the rudiments of education at an evening school. He began his connection with the press as a printer's errand-boy, and by degrees became printer, publisher, and proprietor of a paper which he called the "Yankee," published at Wiscasset, in Maine. He set the types of this journal, worked the paper with the aid of a roller-boy, and distributed himself the copies among the subscribers. He next began to compose leading articles, essays, and tales, as he set the types, without manuscript. Experience teaching him his want of knowledge, he began to prepare himself for college by studies and exercises in Greek and Latin, defraying the necessary expenses of his education by teaching school in addition to the labor of setting type. He entered and graduated at Brown university, Providence, R. I.; afterward conducted a grammar school at Haverhill, Mass., and became editor and part proprietor of the "Haverhill Gazette." This position he relinquished in 1836, and became the correspondent in Washington of the "New York Daily Advertiser," and of several New England papers. About the same time he acquired an interest in the "New York Express," which was just established by his brother James Brooks, and has continued from that time, with a short interval, one of its editors and proprietors. He remained, however, in Washington as its local editor for 16 successive sessions of congress. In 1843 he went to Europe, and travelled extensively there, writing home, as his brother had done, letters descriptive of scenes and incidents in the old world. He was elected to the senate of the state of New York in 1853, and advocated strongly the passage of the bill divesting the bishops of the Roman Catholic church in that state of the title to church property in real estate, and assimilating the tenure of such property to that of other religious corporations by vesting it in trustees for their use. He was involved, in consequence, in a controversy with Archbishop Hughes, of New York, which was prosecuted with great spirit on both sides, and attracted much attention. He was again elected to the senate in 1855. In the summer of 1856 he received the unanimous nomination of a convention of the American party for governor of the state of New York, and at the ensuing election led the presidential ticket with which he was associated about 7,000 votes. He married the youngest daughter of the late Chief Justice Oranch of Washington, and resides with his family in New York.

BROOKS, JAMES, an American journalist,

senior editor of the "New York Express," born at Portland, Me., Nov. 10, 1810. He was left an orphan at an early age, by the death of his father, in 1814, to struggle with poverty. He entered a store at Lewiston when only 11 years old. At 16 he rose to the dignity of a school teacher, became a member of Waterville college, Me., at 18, and graduated before he was 21 at the head of his class. He was next at the head of the Latin school in Portland, then travelled through the southern states of the Union, and among the Creek and Cherokee Indians, and wrote letters to various journals, descriptive of their condition. Afterward he became the correspondent at Washington of several papers in different parts of the United States, and the originator of the system of regular Washington correspondences. Becoming in 1835 member of the legislature of Maine, from Portland, he introduced the first proposition for a survey for a railroad from Portland to Montreal and Quebec. The same year he visited Europe, travelling on foot over a great part of the continent and the British isles, and giving an account of his adventures and the places he visited in a series of interesting letters to the "Portland Advertiser." On his return in 1836 he established the "New York Express," a journal of which a morning and evening edition are issued daily. It is a noticeable fact in journalism that this paper, which has attained an extensive circulation, was established without capital by a young man who was at first a stranger and without personal friends in New York. In 1847 he was elected to the assembly of the state of New York, and in the following year chosen a member of congress from New York city, in which post he was continued by successive reelections until 1853. In this new field he took an active part in debate in the business of the house, particularly in matters relating to trade and commerce, and was influential in establishing the recognition of the trade to and from California as falling within the American coasting trade. He used his privilege of nominating a cadet from his district for the West Point military academy in favor of the best scholar in the New York free academy, notwithstanding numerous applications from those in a higher position in society, and procured an appropriation for a burial-place for sailors on Long island, where the place of interment is minutely recorded, enabling the spot to be found after the lapse of years. Mr. Brooks took part in favor of the passage of the measures known as the "compromise" in 1850, and since his retirement from congress has been, through his journal, a prominent advocate of the policy, and identified with the fortunes, of the American party.

BROOKS, JAMES GORDON, an American poet, born at Claverack, N. Y., Sept. 8, 1801, died in Albany Feb. 20, 1841; graduated at Union college in 1819; studied law, and removed in 1823 to New York, where he became editor

of the "Minerva," a literary journal, and afterward of the "Literary Gazette," the "Athenæum," and the "Morning Courier," continuing in all these papers the publication of his verses. In 1828 he married Mary Elizabeth Aikin, of Poughkeepsie, a young lady of poetical talent, who had written under the signature of Norma, and the next year appeared the "Rivals of Este, and other Poems, by James G. and Mary E. Brooks." The year after, they removed to Winchester, Va., and in 1838 to Rochester, N. Y., and afterward to Albany.—MARY E. BROOKS, his wife, in addition to her literary abilities, was a skilful designer. The original drawings of the plates in the "Natural History of the State of New York," by her brother-in-law, Mr. James Hall, were made by her from nature.

BROOKS, JOHN, LL. D., an American officer and statesman, and governor of Massachusetts, born at Medford in 1752, died March 1, 1835. While pursuing the study of medicine he displayed a love for military exercises, and having settled as a medical practitioner at Reading undertook the drilling of a company of minute men, with whom, on the news of the expedition to Lexington, he marched in time to see the retreat of the British. Promoted soon after to the rank of major in the continental service, he assisted in throwing up the fortifications on Breed's hill, and was especially serviceable to the army as a tactician. He was made lieutenant-colonel in 1777, and in the battle of Saratoga stormed the intrenchments of the German troops. He was a faithful adherent of the commander-in-chief during the conspiracy at Newburg. Washington requesting him to keep his officers within quarters, that they might not attend the insurgent meeting, his reply was: "Sir, I have anticipated your wishes, and my orders are given." Washington took him by the hand, and said, "Col. Brooks, this is just what I expected from you." After the peace he resumed the practice of the medical profession in Medford, and was for many years major-general of the militia of his county. In the war of 1812 he was adjutant-general of Massachusetts, and in 1816 he was elected governor of that state, almost without opposition, an office to which he was reelected annually till 1823, when he declined being again a candidate. Beside official papers, he left a eulogy on Washington, and an address before the society of the Cincinnati.

BROOKS, MARIA, an American poetess, known also by the name of MARIA DEL OCCIDENTE, which she first received from Mr. Southey, born at Medford, Mass., about 1795, died at Matanzas, Nov. 11, 1845. Her family were Welsh, her maiden name being Gowen, and she doubtless received the basis of her education from her father, who was an educated man, and possessed of considerable property, which, however, he lost, and died shortly after. Maria attracted the regard of Mr. Brooks, a Boston merchant, who completed her education

at his own expense, and afterward married her. At this period Mrs. Brooks first evinced the possession of poetical talent; but she published nothing until 1820, when "Judith, Esther, and other Poems" appeared. On the death of her husband in 1828, she removed to Ouba, where she came into possession of some property, and where she finished her principal work, "Zophiel, or the Bride of Seven," the first canto of which was published in Boston in 1825. In 1830 she visited Paris and London, still improving her work, and after being read and highly complimented by Mr. Southey, Washington Irving, and other distinguished authors, it appeared in London in 1838. The notes for the latter cantos of "Zophiel" were written at Mr. Southey's residence at Keswick. A passage occurs in the "Doctor," in which, after quoting some lines from "Zophiel," Mr. Southey terms Mrs. Brooks "the most impassioned and most imaginative of all poetesses." In 1843 she published privately "Idomen, or the Vale of Yumuri."

BROOKS, PETER CHARDON, an eminent American merchant, born at Medford, Mass., Jan. 6, 1767, died in Boston, Jan. 1, 1849. His boyhood was passed upon a farm, and he attained his majority in the year that the federal constitution went into operation. Though the country was then distressed and embarrassed by the war, an efficient national legislation soon encouraged and revived commerce, and American vessels soon resorted to foreign ports in larger numbers than ever before. Under these circumstances Mr. Brooks sagaciously selected the business of marine insurance, entered an office in Boston as secretary, and soon after, upon the retirement of the principal, took the business into his own hands. His success was due at first to diligence and despatch in preparing policies and paying losses; and while he often labored in his office till midnight, he occupied any leisure time in reading works on the law of insurance. He was indebted in no period of his life to great speculative profits, but availed himself with good judgment of the subsidiary advantages which his regular business offered, the chief of which was the opportunity of sending, under the name of "adventures," articles of trade to foreign markets. The facilities which he had for becoming acquainted with the state and tendencies of prices enabled him to carry on a trade in this way to the extent of his means with uniform success. His most rapid accumulations were made between 1798 and 1803, at which time he relinquished his office, and was accounted one of the wealthiest citizens of Boston. He devoted 8 years to the settlement of all the risks in which he was interested, and the liquidation of all outstanding engagements, and then withdrew from active participation in business. His maxim was that the whole value of wealth consists in the personal independence which it secures, and he was not tempted to put that good, once

obtained, at hazard, in quest of extravagant gains. He was from this time a member and often the president of many benevolent associations, enjoyed the society of a large circle of friends, and passed his summers at Medford, on the estate which had been the seat of his family for generations, where he afforded to the neighborhood an example of a thorough practical farmer. Mr. Brooks was a member of the first municipal council of Boston after its incorporation as a city, and at different times a member of the executive council and of the senate and house of representatives of Massachusetts. In the legislature he took a prominent part in urging the measures for suppressing lotteries, which at that time were countenanced without scruple for raising money for meritorious purposes by persons and corporations of the greatest respectability. (See "Life of P. C. Brooks," by Edward Everett, in Hunt's "American Merchants.")

BROOKS, PIERCE S., member of congress from South Carolina, born in Edgefield district of that state, Aug. 4, 1819, died in Washington, Jan. 27, 1857. He was graduated at South Carolina college in 1839; elected to the legislature of his native state in 1844; raised a company for the Mexican war and led it as captain in the famous Palmetto regiment. He was sent to congress in 1853, made his first speech in Feb. 1854, on the subject of the Nebraska bill; speaking also in June of the same year on the Pacific railroad bill. On May 22, 1856, Senator Sumner, of Massachusetts, having employed in a speech in the senate various expressions which had greatly incensed the members of congress from South Carolina, Mr. Brooks entered the senate chamber, after the senate had adjourned, while Mr. Sumner was seated at his desk engaged in writing, and with blows on the head from a gutta serena cane struck the senator to the floor, where he left him insensible. On June 2 a committee of the house of representatives reported in favor of Mr. Brooks's expulsion. In the final action upon the report there were 121 votes in favor of and 95 opposed to it, which, being less than the requisite two-thirds vote, prevented the house from agreeing to the resolution. Mr. Brooks, however, resigned his seat, and, July 8, pleaded guilty before the court at Washington upon an indictment for assault, and was sentenced to a fine of \$300. Having addressed his constituents on the subject of the assault, he was reelected to congress by a unanimous vote, and made on Jan. 7, 1857, a second speech on the Nebraska bill. He died suddenly of acute inflammation of the throat.

BROOKS, SHIRLEY, an English author, born in 1816. He was originally intended for the law, which profession he abandoned for dramatic and journalist literature. He was attached to the London newspaper press when his first piece (a farce called the "Lowther Arcade") was produced at the Lyceum theatre. This was followed by other plays, generally successful.

Mr. Brooks has contributed largely to periodical literature—tales, essays, sketches, and criticisms. His first story of any considerable length, "Aspen Court," appeared in "Bentley's Miscellany." When the London "Morning Chronicle" despatched members of its literary corps to inquire into "labor and the poor," abroad as well as in England, Mr. Brooks visited southern Russia, Turkey, and Egypt, and his newspaper letters were finally published in a volume, entitled "The Russians in the South." His last work, a serial novel, entitled "The Gordian Knot," began to be published at London in 1857.

BROOM, a genus of plants, consisting of shrubs or small trees, with leaves in threes and yellow or purplish-white flowers, belonging to the natural order *leguminosae*. The common broom, the *spartium scoparium* of Linnæus, and the *cytiscus scoparius* of De Lamarck, is a bushy shrub, with smooth, angular, dark-green branches, and yellow, butterfly-shaped, axillary blossoms, and is common on sandy heaths in Great Britain. Bundles of its twigs make brooms for sweeping. Its roasted seeds are sometimes used as coffee. The fibres of its bark, separated by soaking, may be manufactured into matting and cordage. A decoction of its tops has been celebrated as a medicine for dropsy, but, though often efficacious as a diuretic, it is not certain in its operation. The *spartium junceum*, or Spanish broom, is a native of Spain, abundant in Valencia, and is supposed to be the plant which, according to Pliny, overspread whole mountains near Carthage. Its twigs and bark are manufactured into carpets and various implements, and are articles of merchandise. It is cultivated as an ornamental shrub in gardens.

BROOM CORN (*sorghum saccharatum*), a plant which is a native of India, and is cultivated in Europe and America, having a jointed stem like a reed, usually rising to the height of from 6 to 10 feet, bearing an effuse spike, of which brooms are made. It has yellow oval seeds, villous oblong florets, and broad lanceolate leaves. The introduction of broom corn as an agricultural product into this country, is attributed to Dr. Franklin. He is said to have accidentally seen an imported whisk of corn in the possession of a lady of Philadelphia, and while examining it as a curiosity, saw a seed, which he planted, and from this small beginning has sprung the present product of this article in the United States. The cultivation of the broom corn is now very extensively carried on in most parts of the United States, especially by some branches of the religious society called Shakers, and the manufacture of it into brooms is becoming a branch of business of great importance, in which there is much capital invested, and from which very considerable profits are derived. The seed of the broom corn is excellent for fattening sheep. They are very fond of it, and will fatten on it nearly as well as on Indian corn. It is also recommended for feeding poultry, and when

ground with Indian corn, rye, oats, or barley, is very profitably fed to cattle. When ground, and mixed with wheat bran, it is even good for milch cows. The Shakers have frequently fed it to horses in the time of harvesting the brush; and, indeed, in that season of the year, they seldom feed any other kind of grain. It is considered by some to be worth as much per bushel, when fully ripened, and well cured, as Indian corn. The drying process is performed in the same manner as with any other moist seed of like bulky nature. It may be dried on barn or garret floors, and the ground is often used for the purpose. Frequent stirring, while drying, is essential. It should be run through a fanning mill before grinding. As to the yield of seed, it is somewhat precarious; yet it will often more than pay the whole expense of cultivation and preparing the crop for market. In some cases 150 bushels of good seed have been obtained from an acre, but this is a rare yield. The harvesting of the crop most generally commences while the seed is in its earliest stage, or milky state, as the early harvested broom is the brightest and best; consequently there must be a sacrifice of more or less seed. Alluvial lands are the best for raising broom corn; yet almost any soil that will raise good maize will produce a tolerable crop of broom. It will pay well for manuring and for careful culture. No crop is more beautiful in appearance than the standing corn, when in perfection. It often attains to a height of 12 to 15 feet. The stalks of the plant are long and hard, and are considered of but little consequence, except for manure. However, cattle having access to them before the frost, will feed well upon their leaves.—The planting is generally done with a machine, drawn by a horse, in rows 8 feet apart, wide enough for the cultivator or plough to pass conveniently. The seed is dropped in hills from 16 to 18 inches apart; 4 quarts of seed are sufficient to plant an acre. The seed will germinate and the blade make its appearance in 4 or 5 days, if the weather is favorable and the soil productive; 4 or 5 spires are sufficient to remain in a hill. It may be manured in the hill, or by spreading the manure upon the ground, or in both ways, if high cultivation is desired. One man, with a horse and double planting machine, that is, a machine that will plant 2 rows at the same time, may plant from 10 to 12 acres in a day. The labor of 1 hand, 4 months, will cultivate about 6 acres, and harvest the same, and the average produce per acre is about 500 lbs. For a broom, 1½ lb. of brush is allowed, and 1 man will manufacture 5 tons of brush in a year, if constantly employed. The entire cost of a broom is 10 cents, the component parts being 1½ lb. of brush at 6 cents, tying on 2½ cents, handle 1½ cents, and wire, twine, &c., ½ cent. After the corn is well up, the cultivator can be profitably used 3 or 4 times before hoeing, after which commences the weeding and thinning. As a general rule, two hoeings are sufficient. At the last time, and when the

corn is 10 or 12 inches high, the Shakers use a double-moulded plough, which turns a furrow each way. They have an island in the Mohawk river, in the town of Niskayuna, Schoenectady co., N. Y., of about 70 acres, which has been planted annually for 80 years in succession, without any manuring, and the last crop raised was about the same as usual, yielding over 500 pounds to the acre. Broom corn planting may be performed with safety from the middle of May to the 1st of June, and even later, if the season is good. The usual practice in harvesting, is to bend the stems or stalks of the corn, some 2½ or 3 feet from the ground, and leave them for a few days to dry. They are then cut 6 or 8 inches from the brush, and laid into heaps, ready to be carried to the scraper. The seed is removed from the brush by various methods, from the best horse-power scraping machines, by which the brush of 8 acres of corn may be cleaned in a day, down to the original hand machines of the simplest construction. That part of the stalk still remaining in the field should be ploughed under during the fall, or in the following spring. The practice of the Shakers is to break them down with a heavy drag in the spring following, and plough them under, and then run over the ground with a large roller, which process prepares the land again for planting. Some carry their stalks into the cattle or sheep yards, where they become incorporated with the manure, and thereby make a valuable addition to the compost. We subjoin an account of the expenses of cultivating an acre of broom corn on the above mentioned Mohawk island, in the year 1857:

Dragging stalks, ploughing, and rolling.....	\$3 00
Planting.....	25
Four quarts of seed, at \$3 per bushel.....	25
Cultivating, and hoeing first time.....	9 00
Ploughing, and hoeing second time.....	1 25
Harvesting, &c.....	4 00
Rent for land.....	10 00
Expense of one acre.....	\$30 75
Value of brush, 500 lbs., at 6 cts.....	\$30 00
Seed.....	4 00
	34 00
Net, one acre.....	\$13 25

In this estimate, under the head of harvesting, &c., is included the scraping of the brush, and the putting of it in a proper situation to dry.—When the broom corn was first introduced by the united society of Shakers in Watervliet, N. Y., in the year 1791, it was raised in the garden as other corn. In 1798, it began to excite attention, and some few brooms were manufactured by them for the market, and sold at the price of 50 cents each. The handles were made of soft maple timber, and turned in a common foot lathe. The machinery for manufacturing the brooms was very simple. It consisted of nothing more than a roller or cylinder of wood, turned by a short crank for the purpose of winding on the cord or twine, and by placing one or both feet against this cylinder, the tightness of the twine was governed, and the broom

made by holding the handle in one hand, and applying the brush with the other, while winding. The next process, by way of improvement, some few years after, was the addition of a bench to the roller, in a frame fastened to the bench, and a rag-wheel to hold the cord when wound upon the roller by a short crank as before. Two dozen a day, well made, were considered as much an exploit as the 6 or 8 dozen at the present time. Nearly all the Shakers' societies in the United States are more or less engaged in this branch of employment; but the societies at Watervliet, N. Y., and that at Union Village, O., carry it on the most extensively. The capital invested in it by the Shakers, unitedly, would amount to some \$40,000; bringing in, generally, a net profit of 5 to 25 per cent. The price of broom corn is very fluctuating, from \$80 to \$220 per ton, depending upon the quantity raised, and in market. It is a matter attended with some difficulty to ascertain precisely the quantity of brooms raised in any one state, and much more so in the whole Union. But according to the best calculation we are able to make, there are cultivated in the state of New York alone not fewer than 10,000 acres; and allowing an average yield of 500 pounds per acre, at the medium price of \$120 a ton, we have a product equal to \$300,000. In Illinois about 9,000 acres are probably planted, and in Ohio, about 6,000 acres; making together 15,000 acres, at an average yield of 550 lbs. per acre, worth \$495,000. Supposing that the other states, unitedly, produce a quantity of broom corn equal to the 3 states above mentioned (which, no doubt, is the fact), we have in the aggregate \$1,590,000 as the value of broom corn cultivated in the United States annually. We learn from the agricultural reports and otherwise, that this article, so extensively cultivated in the United States, is becoming an object of considerable exportation, and that large quantities of the brush of broom corn, raised in the valley of Ohio and elsewhere, have been shipped to England, together with the broom handles. In this way, we are informed, brooms can be sold cheaper in Great Britain than if made here and exported.

BROOME, a southern county of New York, bordering on Pennsylvania, and containing about 680 square miles. It is drained by the Chenango, Otselic, and other smaller streams, and traversed by the New York and Erie railroad and the Chenango canal. The surface is uneven. The valleys are fertile, but the uplands are only fit for grazing. The productions in 1855, were 214,998 bushels of Indian corn; 14,081 of wheat; 468,870 of oats; 168,420 of potatoes; 53,685 tons of hay, and 1,753,417 pounds of butter. There were 63 churches, and 7 newspaper offices. Named in honor of John Broome, formerly lieutenant-governor of the state. Capital, Binghamton. Pop. in 1855, 86,650.

BROOME, WILLIAM, an English translator, born in Cheshire, 1680, died at Bath, Nov. 16,

1745. He was employed by Pope to assist him in translating the *Odyssey* into English verse. This he did in conjunction with Fenton, and the respective work of each person engaged was as follows: by Broome, books 2, 6, 8, 11, 12, 16, 18, and 23; by Fenton, books 1, 4, 19, and 20; by Pope, the remaining 12. The notes were also compiled by Broome, who received £500 for his whole work, and complained of the scanty payment. His original poetry is very indifferent.

BRORA, a river of Scotland, county of Sutherland. It rises on the S. E. side of Ben-ellibrick, and after passing through several lakes, enters the Moray frith, at the village of Brora. In the vicinity of the village is a partial bed of coal in the oolite strata.

BROSSES, CHARLES DE, chief president of the parliament of Dijon, born there, June 17, 1709, died in Paris, March 17, 1777. He was the first to write a book on *Herculaneum*, which was the result of his travels in Italy, and of his personal investigations. Six years afterward, in 1756, he was the first to lay down the geographical divisions of Australia and Polynesia in a history of the navigation of the Australian waters, which he had written at the instigation of his friend Buffon. Within the following 10 years he published an essay *Sur le culte des dieux fétiches*, and another, *De la formation mécanique des langues*; he wrote also for the *Dictionnaire encyclopédique*. His most laborious work, however, was his *Histoire du septième siècle de la république Romaine*, by which he endeavored to supply the lost chapters of Salust.

BROTERO, FELEZ DE AVELLAR, a Portuguese botanist, born near Lisbon, Nov. 25, 1744, died Aug. 4, 1828. Having studied botany at Paris for 12 years, he was, after his return to his native country, appointed professor at Coimbra, in 1791, and in 1800, director of the royal museum and botanical garden, where his services, however, were eventually interrupted by the French invasion. While suffering from want he became acquainted with Geoffroy de Saint Hilaire, and through his influence the French government was induced to pay him \$1,500 for the balance due upon his salary. In 1811 he received a professorship in the university, and in 1821 was elected to the cortes, for the province of Estremadura.

BROTHERS, RICHARD, an English fanatic, born about 1758, died in London, Jan. 25, 1824. His early career is scarcely known, beyond the fact that he had been a lieutenant in the British navy for several years, and quitted the profession in 1789. In consequence of declining to take the usual oath to enable him to draw his half-pay, he did not receive that allowance, and in 1790-'91 was reduced to great straits, the workhouse ultimately being his residence. He claimed from this time to be the apostle of a new religion, announcing himself as "nephew of the Almighty and prince of the Hebrews, appointed to lead them to the land of Canaan." On May

12, 1792, he sent letters to George III., the ministry, and the speaker of the house of commons, declaring that he was commanded to go to the parliament house on the 17th of that month, and inform the members, for their safety, that the time was come for the fulfilment of the 7th chapter of Daniel. He presented himself at the door of the house of commons, and was literally kicked away from it. In 1794 he published a book, in two parts, called "A Revealed Knowledge of the Prophecies and Times." Having prophesied the death of the king, the destruction of the monarchy, and that the crown was to be delivered to him, it was thought necessary to commit him to prison, where he was detained for some time. On his release from Newgate he resumed his prophesying, and had numerous believers. His disciples were not confined to the poor and ignorant, but included Halped, the orientalist; William Sharp, the engraver, who executed his portrait, inscribing under it, "Fully believing this to be the man appointed by God, I engrave his likeness;" and other persons of distinction and wealth. Many of his followers sold their goods to be ready to accompany him to the new Jerusalem, which was to be built on both sides of the Jordan, and which he was to reach in 1795. Jerusalem was to become the capital of the world, and, when the Jews were fully restored, in 1798, he was to be revealed as prince and ruler of the Jews, and governor of all nations. At last, Brothers was committed to Bedlam as a dangerous lunatic. After some delay, application was made to Lord Chancellor Erskine, who granted an order of release on April 14, 1806. Mr. Finlayson, one of his disciples, then removed him to his own house, in which, at Finlayson's charge, he constantly resided during the last 9 years of his life. Mr. Finlayson related these facts in a publication of his in 1848, and has since repeated the avowal of his continued belief in the mission of Brothers.

BROUCKERE, CHARLES MARIE JOSEPH GHISLAIN DE, a Belgian statesman, born at Bruges in 1796, or according to others, at Maestricht, in 1791. He was educated at the polytechnic school of Paris; in 1815 he entered the army as sub-lieutenant, but retired in 1820 in consequence of ill health. For a time he was employed in a banking house of his uncle, and subsequently obtained a public office. In 1825 he was elected deputy to the states-general, and at once enlisted in the ranks of liberalism, to which he contributed both by his speeches and writings. In 1829 he threw up his public appointments. On the breaking out of the revolution he inclined toward a middle course, and for a time supported the plan of separating from Holland, retaining, however, a prince of the house of Orange on the Belgian throne. Soon, however, he threw himself into the full current of the revolution. He was at the head of the financial department in the provisional government, and suggested the nomination of the duke of Nemours to the throne. Nevertheless, on

the election of Leopold, he was called to the ministry of the interior. When the active hostility of the Dutch threatened the existence of the infant state, his administrative abilities were so preëminent that the war ministry was forced upon him. He raised and equipped an army of 80,000 men. Subsequently he felt so keenly the aspersions thrown upon his conduct and exertions at this eventful period that he renounced his political career in disgust. He was now made director of the mint, and on the opening of the university of Brussels, desirous of inviting, by his example, the coöperation of eminent men, he accepted one of the professional chairs, declining the salary. In 1835 he accepted the presidency of the Belgian national bank. In 1838 the bank was compelled to suspend cash payments, and Broeckère retired from the administration. In 1840 he was again chosen as deputy, and soon afterward as mayor of the city of Brussels. He displayed great judgment during periods of difficulty, presided with signal ability over the economical and agricultural conventions held in Brussels in 1847 and 1848, and had the title of count offered to him by the king in 1857, but declined accepting it.—HENRI MARIE JOSEPH GHISLAIN DE, brother of the preceding, born at Bruges in 1801, was attorney-general at Roermonde, when the revolution of 1830 broke out, in which he took an active part as a volunteer in the army, and as a member, and afterward as secretary, of the national congress. He was one of the commissioners sent to England in 1831 to offer to Leopold the Belgian crown. From 1832 to 1843 he was a member of the chambers, in the 1st year for the borough of Roermonde, where he continued to officiate as attorney-general, and afterward, when chosen as a representative of Brussels, he practised his profession at the court of appeal of the capital. From 1840 to 1846 he officiated as governor of the provinces of Antwerp and Liège. Aug. 12, 1847, he was made a member of the ministry, but without special functions. In the latter part of 1849 he was sent as ambassador to various Italian courts, and from the end of Oct. 1852, to the beginning of March, 1855, he was minister of foreign affairs. His most important act as a legislator has been the revision of the criminal code and the abolition of capital punishment.

BROUGHAM, HENRY, Baron Brougham and Vaux, late lord chancellor of England, born in Edinburgh, Sept. 19, 1778. He is descended from an ancient Westmoreland family, and is, through his mother, the grand nephew of William Robertson, the historian. He was educated at the high school and university of Edinburgh, where he was distinguished for his devotion to mathematics and physical science. In 1796, when not yet 18, he wrote a paper on the refraction and reflection of light, which being sent to the royal society, obtained a place in the "Transactions," though the fact of the extreme youth of its author was unknown. A 2d paper on the same subject appeared in the

"Transactions" of 1797, and a 3d in 1798, entitled "General Theorems, chiefly Porisms in the Higher Geometry." He pursued the study of the Scottish law at Edinburgh, travelled on the continent, and was admitted a member of the Edinburgh society of advocates in 1800. He was a member of the "Speculative club," a debating society, which brought him into close intellectual contact with Horner, Jeffrey, and a number of other persons afterward known to fame. He was one of those who helped to start the "Edinburgh Review," in 1802. To this review Henry Brougham was an assiduous and able contributor for a quarter of a century. In 1803 was published his "Enquiry into the Colonial Policy of the European Powers," which drew much attention upon the young aspirant to literary and historical honors. Having visited London in 1807, as counsel in the case of the disputed succession of the dukedom of Roxburgh, then before the house of lords, he resolved upon settling permanently in England. In 1808, he was called to the English bar at Lincoln's Inn, and chose the common law courts and the northern circuit. In 1810, he gained much popularity by a speech before the house of lords as counsel for some English merchants, who complained of the injurious effect of the "Orders in Council" on their interests. The whig party now sought to put him into the house of commons, and in 1810 he entered that house as member for Camelford, a rotten borough, under the influence of the earl of Darlington. He soon became one of the most violent and vehement opposers of the government and party then in power. One of his first steps was to introduce a resolution requesting the king to take decisive steps for the suppression of the slave trade. From 1810 to 1812, he spoke in favor of Roman Catholic emancipation, and reform in the government of India, and in condemnation of flogging in the army. In 1811 he defended Leigh Hunt, the editor of the "Examiner," and Mr. Drakard, proprietor of the "Stamford News," arraigned for libel by the government, in only one of which defences he was successful. Leigh Hunt, the composer and publisher of the obnoxious article, was declared "Not guilty," while by another jury Drakard, whose offence was the republication of the same article, without alteration or comment, was declared "Guilty." In 1812, he again defended Hunt against a government prosecution. In October, 1812, he offered himself as a whig to the borough of Liverpool, in opposition to George Canning. He was defeated there, and again at Inverkeithing Burghs. He finally reappeared in the house of commons as member for the borough of Winchelsea, of which his old friend the earl of Darlington was owner. This borough he continued to represent until 1830, having in the mean time contested the county representation of Westmoreland three times without success. In 1816, he commenced his efforts in the cause of popular education, by obtaining the appointment of a committee to

inquire into the state of the education of the poor in the metropolis. The appointment of this committee is an event in the history of popular education in England, although at first it remained without any immediate result. The recommendation of the committee to apply a portion of the funds of educational institutions for higher instruction to promote elementary instruction among the poorer classes, did not meet with the approval of the house of commons. In 1818, he succeeded in getting a commission appointed to inquire into the abuses of the public charitable foundations of the kingdom connected with education. The revelations of this commission, which were eagerly watched for and diffused by Mr. Brougham, eventually bore fruit in the nomination of a permanent commission to watch over the honest appropriation of charitable trusts to the objects contemplated by the founders. In 1818, he published a "Letter to Sir Samuel Romilly, upon the Abuse of Public Charities," which ran through 10 editions. In 1819, he and his friends established a model school for the children of the poorer classes in London. In 1820 and 1821, he was chiefly engaged in the case of Queen Caroline, who claimed her rights as queen-consort. During this period he was Queen Caroline's chief adviser, contributing by his eloquence to obtain a verdict in her favor, and gaining immense popularity by the part which he took in the trial. Two of his speeches in this suit have taken their place among the classic specimens of English oratory. In 1823, he helped to found the first mechanics' institute, of which Dr. Birkbeck was the first president and prime mover. In April of this year, he accused Canning of "the most monstrous truckling for office that the whole history of political tergiversation could present," in reference to the latter's supposed intention of abandoning the cause of Catholic emancipation. Canning cried out, "It is false." The quarrel was composed by the authority of the speaker. In this session he spoke on colonial slavery and the delays in chancery. In 1824, he took up the case of the Rev. John Smith, who expired in a Demerara prison under sentence of death for having, as was charged, incited the slaves to revolt. In 1825, appeared his "Practical Observations upon the Education of the People, addressed to the Working Classes and their Employers," of which 20 editions were sold. In the same year he was elected lord rector of Glasgow university over Sir Walter Scott; Sir James Mackintosh, the previous rector, giving the casting vote in favor of Mr. Brougham. The address which he delivered on occasion of his installation has been preserved, and is also a classic. In the same year he introduced a bill for the incorporation of the London university, which was to be conducted upon the principle of the absence of all religious tests and religious preferences. He was one of the most active promoters of this now celebrated university. He was also one of the "Society for the Diffu-

sion of Useful Knowledge," started in 1827. Mr. Brougham was elected chairman of the managing committee, and his discourse on the "Objects, Pleasures, and Advantages of Science," was the first publication of the society. In 1827, he was made a king's counsel, the dislike of George IV. to the counsel of Queen Caroline having delayed the bestowal of this honor for many years. From 1825 to 1830, he spoke constantly in parliament on law reform, Catholic relief, colonial slavery, and the corporation and test acts. His speech of 6 hours' duration, delivered Feb. 7, 1828, in behalf of law reform, indicated the necessity of almost all the legal reforms which have been accomplished in England since that period. During the short administration of Mr. Canning, that statesman received Mr. Brougham's support on account of "his liberal and manly foreign policy." During this period the attorneys, indignant at Mr. Brougham's efforts to reform the law and curtail their profits, formed a combination against him, and pledged themselves to give him no briefs. Mr. Brougham's talent was too tempting to clients to be thus stifled. The plot fell through, and Mr. Brougham earned a larger professional income than he had enjoyed previous to this attempt. In 1830 he resigned his seat for Winchelsea, on the ground of disagreement with his patron, the marquis of Cleveland, and was immediately afterward returned for Knaresborough. At the general election, which ensued upon the accession of William IV., Mr. Brougham stood for Yorkshire, and was returned free of expense. In the course of this canvass, he spoke at 8 different electoral meetings in one day, travelled the same day 120 miles by stage, and appeared fresh next morning at the York assizes. At this time Mr. Brougham occupied the position of leader of the British people, then panting eagerly for reform of parliament. On the formation of the ministry of Earl Grey, he was offered the post of lord chancellor, in the place of Lord Lyndhurst, resigned, with the title of Baron Brougham and Vaux, which was conferred on him in Nov. 1830. In his judicial capacity he excited the astonishment of the chancery bar, long accustomed to the dilatoriness of Lord Eldon, by clearing off all chancery arrears with wonderful rapidity. Party spirit running high, the conservative lawyers accused the new lord chancellor of inaccuracy, but his long and carefully prepared judgments finally succeeded in confuting this impression. Several measures introduced by him into the house of lords for improving the proceedings in bankruptcy, and diminishing his own income by £7,000, became law. With Earl Grey, he bore the principal part in advocating the reform bill in the house of lords. His speech on Oct. 7, 1831, is historical. Mr. Roebuck, in his "History of the Whig Party," says that it was owing to Lord Brougham's astonishing audacity and menaces that William IV. was induced to dissolve the house of commons in 1831. All the measures of reform passed by the first reformed

house of commons received Lord Brougham's support in the house of lords. The dismissal of the whig ministry, Nov. 4, 1834, put an end to his chancellorship and his official life together. He had quarrelled with some of his colleagues, and was disliked by the king; the popular favor which bore him into power had deserted him, and on the reinstatement of a whig cabinet in 1835, Mr. Peypys was made lord chancellor, under the title of Lord Cottenham. Since that time Lord Brougham has enjoyed an ex-chancellor's retiring pension of £5,000 per annum, and has taken an active part in the determination of appeals to the house of peers. Henceforth he was often in antagonism to the whigs; he censured their Canadian policy, and the conduct of Lord Durham, the governor-general of Canada, in particular. The success of this attack has been generally supposed to have been the cause of Lord Durham's speedy death. He remained on the whole true to the liberal cause. His zeal for popular education, the abolition of slavery, and the suppression of the slave trade, and repeal of the corn laws, never slackened. Although ever in favor of the repeal of the corn laws, he was averse to popular agitation, and denounced the league as unconstitutional. In 1839, after a temporary residence in Paris, he published an anonymous pamphlet upon the state of parties in France. Soon after this, he became proprietor of the villa Louise Eléonore, on a beautiful estate in the south of France, near Cannes, overlooking the Mediterranean—his estate in England being Brougham hall, Penrith, Westmoreland, and his London residence No. 4 Grafton street. In 1844, he voted as judicial peer to confirm the sentence of the Irish court of queen's bench upon O'Connell. During the sway of the provisional government of France, in 1848, he applied to it to furnish him with instructions for becoming a French citizen. The reply was that that could only be upon his resigning his titles as an English peer. In 1849, he wrote a "Letter to Lord Lansdowne," violently assailing the men and principles of the revolutionary movement of the continent. Since 1849, Lord Brougham has fairly won the title of the patriarch of law reform; he coöperates with the law amendment society, and is in favor of the introduction of the New York code of procedure into England.—Lord Brougham married, in 1819, the eldest daughter of Thomas Eden, Esq., of Wimbledon, by whom he had one daughter, who died at the age of 17. In 1833 he was elected a foreign associate of the institute of France, and later, of the royal academy of sciences of Naples. In 1850, '52, and '53, he made experiments on the properties of light, which were communicated to the royal society of his own country, and the academy of sciences at Paris, and published in the transactions of both. In 1855, conjointly with Mr. E. J. Routh, he published "An Analytical View of Sir Isaac Newton's Principia." The collected edition of his "Speeches" was published in 1838 (Edinburgh), and later, his

"Speeches at the Bar, and in Parliament," by Longman, of London. Soon after his loss of office, in 1834, he brought out, in conjunction with Mr. Bell, an annotated edition of Paley's "Natural Theology." In 1839-'43, appeared his series of "Sketches of Statesmen who flourished in the time of George III.," and in 1845 his "Lives of Men of Letters and Science who flourished in the time of George III." An edition and translation of the Demosthenic oration "On the Crown," sums up his literary products in the field of Greek literature. Three volumes of his "Political Philosophy" have been published, beside many minor works. His "Speeches on Social and Political Subjects," with a historical introduction, appeared at London and Glasgow in 1857, in 2 vols. 12mo. Among the latest productions of Lord Brougham is a valuable dissertation, read by him, May 18, 1858, before the French academy, on "Analytical and Experimental Inquiries on the cells of Bees," and his speech, delivered June 17, 1858, in the house of lords, on the suppression of the slave trade.

BROUGHAM, JOHN, an Irish actor and playwright, born in Dublin, May 2, 1810. He was intended for the medical profession, but the prospect of a government clerkship took him to London, where, being disappointed in this hope, he gave lessons in drawing for some time, and finally became an actor at the Olympic theatre, then managed by Madame Vestris. He gradually worked his way up to the Haymarket theatre, where he made a very successful first appearance, in June, 1832, as Looney MacTwolter, in the "Review." He soon was accepted by the public as a good light comedian and Irishman; occasionally writing farces and other small dramas. In 1842, he came to America, appeared at the Park theatre, New York, as Tim Moore, in the "Irish Lion," and has subsequently performed in almost every principal theatre in the Union. Having managed a theatre in Boston, he built the Lyceum (now Wallack's), in New York, in 1850, but relinquished it at the end of two seasons. He also managed the Bowery theatre, New York, in 1856-'57. Mr. Brougham is a very popular actor. He is author of various comedies, dramas, and extravaganzas; he has also successfully adapted pieces from the novels of Dickens and Bulwer. He has collected some of his fugitive prose stories and articles into 2 volumes, called "A Basket of Chips," and "The Bunsby Papers."

BROUGHTON, THOMAS, a learned theologian and one of the first writers in the "Biographical Britannica," born in London, July 5, 1704, died Dec. 21, 1774. His musical taste made him an acceptable coadjutor to Handel, for several of whose compositions it is understood that he furnished the words.

BROUGHTON'S ARCHIPELAGO, a collection of islands named after their discoverer, an Englishman, situated on the north-west coast of North America, and extending from long. 125° to 12° 70' W., and from lat. 50° 33' to 51° N.

BROUNCKER, WILLIAM, viscount, of Castle Lyons, in Ireland, a mathematician and publicist, born in 1620, died in 1684. In 1657 and 1658 he was engaged in a correspondence on mathematical subjects with Dr. John Wallis, who published his letters in the *Commercium Epistolicum*. During the civil wars he adhered to the cause of the crown, and after the restoration was made chancellor to the queen consort, a commissioner of the navy, and master of St. Catharine's hospital. He was one of the founders of the royal society, and its first president.

BROUSSA, or BRUSA (anc. *Prusias*, also *Prusa ad Olymum*, from being situated at the foot of Mount Olympos), a town in the Turkish government of Anatolia, in Asia Minor, the capital of the district of Khudavendkiar, about 57 miles S. S. E. of Constantinople, was celebrated for the extent of its commerce in silk and other goods, and for its beautiful situation, until 1855, when the town was almost entirely destroyed by an earthquake, burying hundreds of the inhabitants among its ruins, and compelling the rest of the population (consisting, according to the census of 1852, of 73,000, of whom 11,000 were Armenians, 6,000 Greeks, and a small number Jews,) to resort to flight. Among those thus suddenly driven away from Broussa was Abd el Kader, who had resided here since 1853. Broussa was the ancient capital of Bithynia, deriving its name from Prusias, one of the early Bithynian kings. Under the Romans it was the residence of Pliny the Younger and of other Roman governors. Wrested from the hands of the Greek emperors by Orkhan, the son of the founder of the Ottoman dynasty, it became the seat of the new empire, till Amurath removed the seat of government to Adrianople. The tombs of the ancient sultans, the mosques, of which there were at least 800, and other remarkable buildings, handsome bath-houses, a vast number of private and public fountains, fine gardens, extensive bazaars, and the superb view from Mount Olympus, all contributed to enhance the beauty of the ill-fated town. Kossuth resided for some time at Broussa, after his flight from Hungary.

BROUSSAIS, FRANÇOIS JOSEPH VICTOR, a French physician, born at Saint Malo, Dec. 17, 1772, died at Vitry, near Paris, Nov. 17, 1838. His early years were passed at Pleurtuit, a small village in which his father was established as a medical practitioner. At the age of 12, Broussais was sent to school at Dinan, where he was pursuing his studies when the great revolution broke out in 1789. He was enrolled in a body of volunteers and joined the army. At the end of 2 years he obtained leave to return home, on account of sickness. On his recovery he became a student of medicine, and was appointed as an officer of health, first in the hospital of St. Malo, and afterward in that of Bryt. He soon obtained a commission as surgeon on board of a ship of war, and was present in several battles against the English. He held a good appointment at Bryt from 1795 to 1798; but being anxious to pursue a course of study at Paris, he

removed there, with his wife, in 1799. Bichat was then one of the most influential men in the medical schools of Paris, and Broussais lost no time in making his acquaintance. They soon became intimate friends, and remained so until Bichat died, in 1802. Broussais received his diploma of doctor of medicine in 1808; and, through the influence of Deagenettes, obtained an appointment as military surgeon, in 1804. Two years later he was sent to the camp at Boulogne, but the project of invading England being abandoned, the army was marched through Europe, and Broussais went with it in all its campaigns through Germany, Holland, Italy, and Spain. Studios in the midst of military life, he began to meditate on the various causes of disease, and the symptoms which are common to most kinds of organic and functional derangement. In 1808 he obtained leave to go to Paris to superintend the publication of his "*History of Chronic Inflammations*." This work, which contains the germs of all his future doctrines, met with little notice at the time; for, although Pinel praised it highly, and it was honorably noticed by the institute, he could not obtain for it more than \$150, and nearly the whole edition remained unsold until 1816. Soon after this publication, in 1808, he was appointed chief physician to a division of the French army in Spain, where he remained 6 years, pursuing his researches and attending to the duties of his office. In 1814 he was appointed assistant professor at the military hospital of the *Val de Grâce* in Paris. He commenced a course of lectures on practical medicine, in which he attempted to form a system and a school of his own, in opposition to the doctrines of Pinel, then taught in the established schools of medicine. His lectures were attended by great numbers of students, who accepted his ideas with enthusiasm. In 1816 he published his *Examen des doctrines médicales*, which excited the dislike and opposition of the whole medical faculty of Paris. By degrees his doctrines gained approval, and were admitted in the writings and the practice of many eminent physicians. They were taught even in the medical school itself, long before 1831, when Broussais was appointed professor of general pathology in the academy of medicine, which office he held until his death. Beside the two works above mentioned, he published in 1824 his *Traité de la physiologie appliquée à la pathologie*; in 1829, his *Commentaires des propositions de pathologie consignées dans l'examen*; in 1832, *Le choléra morbus épidémique*.—The life of Broussais presents 8 distinct periods. In the first, he labored with all his might to prove that the doctrines of Pinel with regard to the essentiality of fever were erroneous, and that some morbid agent, producing irritation and inflammation, was the cause of all disease. From 1816 to 1821 he was occupied in controverting the established theories, from this point of view, and with entire success. His followers then complained that he had shown the fallacy of Pinel's theory, but

had not sufficiently elaborated a new doctrine to replace it. From 1821 to 1828, he labored to establish what he called the "physiological system of medicine," in opposition to the "ontological" system of Pinel. The "History of Chronic Inflammations" had prepared the way for his theory of irritation in the organs, corresponding to a principle of irritability in the organism. He therefore proclaimed this doctrine as the basis of all medical truth, and he sustained his views, with much ability and general success, from 1821 to 1828. It was the doctrine taught by Brown in Edinburgh, more than 80 years before; and had already met with much success in England, Germany, and Italy, though little known in France, until revived by Broussais under a new form, and to a great extent, no doubt, by a natural train of reasoning from the same point of view, more than from a servile imitation of Brown's system. Broussais had immense success in France and Belgium for 7 years, where this theory was practically new, and very rational, compared with Pinel's views. In England and in Germany it met with less success, because it had been known as the doctrine of Brown; and though very true in many points, it was nevertheless insufficient to explain all the phenomena of health and disease. The same opinion arose in France after a 7 years' practical trial of the system; and after being greatly lauded and admired, Broussais was deserted by the students and professors of medicine. The partial truth of his views was admitted, but other principles and doctrines were wanted to explain the physiological and pathological phenomena of life. In nervous diseases it afforded no assistance, but left the student as much in the dark as he was before; and this was admitted by his own partisans, and partly by Broussais himself. To make his system more complete, he undertook a series of observations on the nervous system, and its relations to psychology. Although he had been up to that time more or less opposed to phrenology, he turned his attention to the subject, gave public lectures on it, and in 1836 published an octavo volume under the title of *Cours de phrénologie*. This work had a temporary run of popularity, but it failed to make an abiding impression. Broussais's theory was on the wane, as a partial view of truth, not containing a complete and unitary principle of science. The labors of Dr. Marshall Hall, Dr. Brown-Séquard, and other eminent physiologists of the present day, have done much to advance the science of medicine in the directions which Broussais had left unexplored.

BROUSSONNET, PIERRE AUGUSTE, a French physician and naturalist, born at Montpellier, Feb. 23, 1761, died there July 9, 1807. He was the first who introduced the botanical system of Linnæus into France. He also caused the first flock of merino sheep to be brought thither from Spain, and the first Angora goats to be imported from the Levant. He was a member of the national assembly and

the convention; but giving umbrage to the terrorists, he was cast into prison, from which he succeeded, however, in escaping to Madrid. Here he encountered the persecutions of French emigrated nobles, and was reduced to great poverty, when Sir Joseph Banks, whose acquaintance he had made during a visit to London, sent him a gift of \$5,000, and procured him a passage to India in an English ship. The vessel in which he had embarked was forced into Lisbon harbor by a storm, and, experiencing here fresh persecutions, he passed over to Africa, where he procured employment as physician at Morocco, and resumed his botanical and zoological studies. Under the empire he was appointed French consul at Mogadore and the Canaries; and in 1805, on his return to France, he was made a member of the legislative assembly. He was a member of the principal learned bodies of France, and author of several botanical, zoological, and medical works of great value; but his most important work is his *Ichthyologia, seu Piscium Descriptiones et Icones*, published in London in 1792.

BROWN, the name of counties in several of the United States. I. A south-western county of Ohio, bordering on the Ohio river, and having an area of 502 sq. m. The surface near the river is hilly; but in other portions, level or gently undulating. The natural excellence of the soil is much enhanced by good cultivation, and the crops of corn, wheat, oats, hay, and tobacco are usually abundant. Cattle and swine are raised in considerable numbers. The productions in 1850 were 1,209,485 bushels of Indian corn, 192,065 of wheat, 180,810 of oats, and 1,279,510 lbs. of tobacco. There were 20 corn and flour mills, 19 saw mills, 5 woollen factories, 8 tanneries, 61 churches, and 3 newspaper offices. The Cincinnati and Hillsborough railroad passes near the N. border. Pop. in 1850, 27,382. Capital, Georgetown. II. A southern county of Indiana, watered by Bean Blossom and Salt creeks. Area, 320 sq. m. Its surface is finely diversified by hills and valleys, and the soil is generally productive, yielding wheat, corn, oats, and pasturage. Much of the land is well wooded with the oak, hickory, elm, sugar-maple, walnut, and other trees. The productions in 1850 were 179,804 bushels of Indian corn, 14,154 of wheat, 18,704 of oats, and 10,029 lbs. of wool. The county contained 6 grist and 2 saw mills, 10 tanneries, and 2 churches. Organized in 1836, and named in honor of Gen. Jacob Brown. Pop. in 1850, 4,846. Capital, Nashville. III. A western county of Illinois, on the W. bank of Illinois river. Area, 320 sq. m. The surface is occupied partly by prairies and partly by woodlands. There are few considerable elevations. The soil is highly fertile, and well cultivated. Wheat, corn, oats, cattle, and swine are the chief productions. In 1850 it yielded 513,118 bushels of Indian corn, 76,658 of wheat, 51,325 of oats, 3,000 tons of hay, and 71,569 lbs. of butter. There were 6 grist mills, 10 saw mills,

4 tanneries, 1 newspaper office, 14 churches, and 1,662 pupils attending public schools. Several railroads have been projected, which are to intersect the country. Pop. in 1855, 7,940. Capital, Mount Sterling. IV. A north-eastern county of Wisconsin, at the head of Green bay, intersected by Fox or Neenah river, and having an area of 525 sq. m. At the time of its formation, in 1818, it was much larger. The surface is uneven, and some of the soil fertile. The productions in 1850 were 11,462 bushels of Indian corn, 6,312 of wheat, 17,674 of potatoes, and 2,486 tons of hay. There were in the county 3 grist mills, 24 saw mills, 1 newspaper office, 4 churches, and 860 pupils attending public schools. Assessed value of real estate in 1855, \$565,789. A large part of the surface was formerly densely wooded, and there are still some tracts of good timber. Several railroads radiating from Green Bay, the county seat, have been projected, and one designed to connect that city with Milwaukee has been commenced. The channel of water communication between Lake Michigan and the Mississippi, effected by the improvement and connection of Fox and Wisconsin rivers, passes through this county. Pop. in 1855, 6,699. V. A central county of Texas, intersected by Pecan bayou, and bounded on the S. by the Colorado river. The surface is undulating and hilly, with occasional tracts of rolling prairie, the soil of which is exceedingly rich. There is little timber of any consequence, except along the water courses; but pasturage is abundant, and stock-raising forms the chief occupation of the inhabitants. The county was organized Aug. 27, 1856. Capital not yet chosen.

BROWN, a distinguished family of Anglo-American merchants.—ALEXANDER BROWN, born at Ballymena, county of Antrim, Ireland, Nov. 17, 1764, died in Baltimore, April 6, 1834, came to the United States with his 4 sons in 1800, settling as a general merchant at Baltimore, and subsequently associating his sons with him, under the firm of Alexander Brown and Sons.—His eldest son WILLIAM, born at Ballymena, May 4, 1784, was associated with his father at Baltimore, returned to his native country in 1808, and established himself in 1810 as a merchant in Liverpool. The house thus established by him has been carried on under various firms, and is now known under that of Brown, Shipley, and Co. Having contributed large sums toward the support of the free trade party in south Lancashire, he was nominated as a candidate for parliament in 1844, and after a sharp contest was beaten by the Egerton interest. In 1845 he was returned without opposition, and has retained the position at all succeeding elections. His commercial position gives him much influence in the house of commons, though he is rarely heard in debate. He is very decided in his liberal opinions, having voted for ballot, household suffrage, and other liberal measures. He was one of the early and zealous champions of free

trade, and published in 1850 a series of papers on the subject, which attracted much attention. At the dawn of his career in Liverpool, he took an active part with Mr. Huskisson in reforming the management of the Liverpool docks estate, and he continues to take a most cordial interest in the prosperity of Liverpool. He has contributed £30,000 to the great library at Liverpool, of which the foundation stone was laid April 15, 1857. Mr. Brown is a magistrate and deputy lieutenant of Lancashire, where he has some landed property and a beautiful residence, Richmond Hill, near Liverpool. He is president of the Honduras interoceanic railway company, takes a prominent part in various other great enterprises, and has gained the respect and esteem of the merchants of both countries by his zeal in behalf of the development of all forms of international intercourse between Great Britain and the United States.—GEORGE, 2d son of Alexander, born April 17, 1787, has continued his residence in Baltimore, and carries on business there under the old firm of Alexander Brown and Sons.—JOHN A., 3d son, born May 21, 1788, removed to Philadelphia in 1818, establishing a house there under the firm of John A. Brown and Co., from which he retired in 1838, but which is still continued under the firm of Brown and Bowen, as a branch of the house of Brown, Brothers, and Co. of N. Y.—JAMES, 4th son of Alexander, born Feb. 4, 1791, removed to New York in 1825, and established there in that year the house of Brown, Brothers, and Co. of New York, of which he is yet the head.—In the commercial world the houses of Brown, Shipley, and Co. of Liverpool, and of Brown, Brothers, and Co. of New York, occupy weighty and commanding positions.

BROWN, AARON VAN, postmaster-general of the United States, born Aug. 15, 1795, in Brunswick co., Va., graduated at the university of North Carolina at Chapel Hill in 1814; studied law, and soon after commenced practice in Nashville, Tenn. He was partner in business with the late President Polk, until the latter entered upon his congressional career; served in almost all the sessions of the legislature of Tennessee between 1821 and 1832; was a member of the house of representatives in congress from 1839 to 1845; and was in that year elected governor of Tennessee. He was a delegate to the southern convention held at Nashville in 1850, and submitted a report to that body known as the Tennessee platform. He was also a member of the convention of the democratic party at Baltimore in 1852, to which he reported the platform adopted by them. In 1857 he became a member of President Buchanan's cabinet, in which he holds the office of postmaster-general.

BROWN, ALBERT G., U. S. senator from Mississippi, born in Chester district, S. C., July 31, 1818, removed with his parents to Mississippi, while a child, was appointed a brigadier-general in the state militia when only 19, ad-

mitted to the practice of the law before he was 21, elected member of the state legislature before he was 23, and a representative in congress when he was 26. In 1841 he was nominated a judge of the circuit court, and in 1843 governor of Mississippi, an office to which he was reelected in 1845. At the close of his 2d term as governor he was sent as a representative to congress, reelected in 1849, and again in 1851. In 1853 he was elected to the U. S. senate, and in Nov. 1857, he was reelected for a 2d term of 6 years from March 4, 1859, to 1865. Mr. Brown is an unflinching champion of the views of the democracy of the south.

BROWN (BLACKWELL), ANTONETTE L., an American Congregational minister, born in Henrietta, Monroe co., N. Y., May 20, 1825. At the age of 9 she became a member of a Congregational church, and was even encouraged to speak and lead in prayer, as others did, at their conference meetings. From the religious emotions of that period, and the habits of devotion which marked her childhood, there sprang up in her mind the conception and desire of becoming a preacher. At the age of 16 she taught school during one summer, and then attended the academy in Henrietta; whence in 1844 she went to Oberlin, performing alone her first journey by canal and stage to begin the experiences of college life. She entered at the 2d year of the course, and graduated 2 years after. While studying, she taught drawing and other classes in the seminary. During the winter of 1844, she took a position as teacher in the academy at Rochester. There her first lecture was delivered, in accordance with the custom of the teachers, generally men, to address the pupils and visitors of the academy. During her college course at Oberlin, one vacation was spent in teaching at the academy of her native village, and 2 at college in extra study of Hebrew and Greek. During 2 years, the argument as drawn from the Bible, for or against the public ministrations of woman, was a prominent topic of her serious thought. In 1846, she entered upon the 3 years' course of theology at Oberlin. It was customary for the students to receive a license to preach, whereupon, before the completion of their theological studies, they would begin the practice of speaking in the pulpits of the neighborhood. When Miss Brown desired this license, the professors were grievously exercised, and it was at last decided that she was "a resident graduate pursuing the theological course," but not "a member of the theological department," and consequently that she needed no license from the institution, but must preach or be silent on her own responsibility. She began preaching in Henrietta, O., and continued to do so frequently there and in other places during the remainder of her term of study. In 1849, having completed her theological course, she quitted Oberlin. The 4 years following were spent in private study, frequent preaching, and occasional lectures. Some of these were addressed to lyceums on literary topics,

but more on temperance and the abolition of slavery. In 1849, the first "Woman's Rights" convention met at Worcester. Miss Brown was one of the speakers, and thenceforth, among the various enterprises which received her advocacy, the enfranchisement and development of woman have been prominent. After the convention, she preached several times in the city hall of Worcester. She was invited to preach in many churches of Congregationalists, Methodists, and Baptists, Quakers, Unitarians, and Universalists. She always preached when opportunity offered, alike in the church at Andover, the music hall at Boston, and in the public halls at Worcester, Cincinnati, and New York. In the spring of 1853, she accepted the invitation of a Congregational church in South Butler, Wayne co., N. Y., to become their pastor, and was ordained by them as their settled minister, the Rev. Luther Lee, Wesleyan minister of Syracuse, preaching the ordination sermon. Her connection with the church continued until the summer of 1854, when it was interrupted by ill health, consequent on excessive labor and doubts concerning theological doctrines. She subsequently lectured on reformatory subjects in Cincinnati and elsewhere, and investigated the character and causes of vice in the city of New York, with special reference to its bearing upon woman. The year 1855 was spent in this interesting but most painful work, and she published in a New York journal a number of sketches from life, under the general title of "Shadows of our Social System." In Jan. 1854 Miss Brown married Mr. Samuel C. Blackwell, and has since resided in the vicinity of New York.

BROWN, CATHARINE, a half-blooded Cherokee, born at a place now called Willis Valley, Alabama, in 1800, died July 18, 1823. Her mother's Indian name was Yammungyahah, "drowned by a bear." Her family were of the chiefs of the nation, possessed of property and authority, but entirely ignorant of English and of civilization. When in 1816 the American missionary board sent the Rev. Cyrus Kingsbury into the Cherokee territory to commence a school, Catharine, who had learned to speak a little English, joined it, although at a distance of 100 miles from her home. She was then about 17, modest, affectionate, and virtuous in disposition, and first among all her tribe in wealth, rank, and personal beauty. In 3 months she learned to read and write, and soon became affected by religious impressions, and was baptized in Jan. 1818. In 1820 she began to teach a school near her father's house. She commenced public religious exercises, and was carrying forward her own education into the higher branches when she died.

BROWN, CHADD, minister of Providence, R. I., and ancestor of many of the most distinguished citizens of Rhode Island for 3 centuries, fled thither from persecution in Massachusetts, in 1636, became one of the members of the Baptist church founded by Roger Williams in 1639, and in 1642 was associated with

William Wickenden in the pastoral care. He died in 1665. In 1792 the town of Providence voted a monument to his memory.

BROWN, CHARLES BROOKDEN, an American novelist, born in Philadelphia, Jan. 17, 1771, died Feb. 22, 1810. His ancestors were Quakers who came over with William Penn. At 11 years of age he was placed under the care of a teacher, Mr. Robert Proud, author of a "History of Pennsylvania," and from him he derived a knowledge of the classics. He left Mr. Proud's school before he was 16, and soon afterward drew up the plan of several epics, on the discovery of America as well as the conquest of Mexico and Peru. Neither of them was ever published, nor do any fragments of them remain. He determined to pursue law, and entered on the requisite studies with great assiduity, but presently abandoned the profession to devote himself to literature. The first of his novels was "Wieland," published in 1798. In 1799 he published "Ormond." These 2 novels were successful, and until Cooper in after years produced his admirable works, we find no American fictions to compare with them. In 1798 the yellow fever desolated New York as it had Philadelphia 5 years previous. Brown's most intimate friend, Dr. Smith, fell a victim to the scourge, and the scenes of horror he witnessed were so deeply impressed upon his mind as to form the ground work of his 8d novel, "Arthur Mervyn, or Memoirs of the year 1793." In it he depicts the scenes of the pest-stricken city of Philadelphia. "Edgar Huntley, or the Adventures of a Sleepwalker," was given to the world not long afterward. The scene of this story, as of "Wieland," is laid in Pennsylvania. In 1800 he published the 2d part of "Arthur Mervyn;" in 1801, "Clara Howard," and "Jane Talbot" in 1804. From April, 1799, to the close of 1800, he published the "Monthly Magazine and American Review." In 1805 he commenced the "Literary Magazine and American Register," which he continued 5 years. In 1806 he commenced a semi-annual "American Register," of which he published 5 volumes. In 1804 he married Miss Elizabeth Linn, of New York. In 1809 his health, never very robust, began to decline, and he died of consumption. Brown is justly regarded as the pioneer of American novel writing.

BROWN, DAVID, a converted Cherokee, brother of Catharine Brown, died at Creek-path, Mississippi, Sept. 1829, was educated at the same school with his sister, and at Cornwall, Conn., and engaged with her in educating and Christianizing their native tribe. He was employed as preacher and interpreter, and also acted as secretary of the Indian government. He was one of the most favorable examples of the missionary influence; his letters and reports indicate a cultivated and intelligent mind.

BROWN, FORD MADDOX, an English painter, born at Calais in 1821. He studied his art in Belgium and Paris, and sent 2 cartoons to the competition in Westminster hall in 1844, and

a cartoon and fresco in 1845. Haydon praised the fresco. Mr. Brown, after visiting Italy, produced "Wycliffe reading his Translation of the Scriptures," and in the following year he exhibited "King Lear," and the "Young Mother." He produced in 1851, at the royal academy, a large painting of "Chaucer reciting his Poetry at the Court of Edward III." "Christ washing Peter's Feet," exhibited in 1852, gained the prize of the Liverpool academy in 1856. One of his latest works is entitled "The Last of England;" it illustrates the Australian emigration.

BROWN, FRANCES, a blind poetess, born at Stranorlar, Donegal, Ireland, June 16, 1818. When she was 18 months old she lost her sight, from small-pox. From her brothers and sisters attending the village school, she obtained as much information as they were acquiring, and listened to such books as they would read to her. "Robinson Crusoe" and Mungo Park's African adventures were among these works. The prose writings of Sir Walter Scott, with which she became familiar, from their being read to her, deeply influenced her mind. From the age of 7 to that of 15, she was constantly composing verses. The smoothness of Pope and the passion of Byron, with which she became acquainted about this time, so strongly showed the inferiority of her own attempts, that she abandoned verse-making for some years. But, after this pause, in 1840 she was encouraged by the publication of 3 short lyrics of hers, in the "Irish Penny Journal." In 1841, she commenced contributing to the "Athenæum," edited at that time by Mr. T. K. Hervey. He became interested in her story, related it with considerable effect in the "Athenæum," paid her for her writings, and introduced her to other publications, from which she also derived pecuniary benefits. In 1844, the "Star of Attagehi" and other poems appeared in a small volume, which was well received. Among the advantages accruing to Miss Brown from it, was her being placed on the pension list, for £20 a year, by the late Sir Robert Peel, who was then prime minister. A second volume of poetry has extended her reputation. She has also published a juvenile story, called "The Ericksons," and has been a frequent contributor, in prose as well as verse, to "Fraser's Magazine," "Chambers's Journal," and other literary periodicals. In 1847, she removed to Edinburgh, accompanied by her sister, who acted as her reader and amanuensis; in 1852 she became a resident of London.

BROWN, SIR GEORGE, a British general, was born in August, 1790, at Linkwood, near Elgin, Scotland. He entered the army Jan. 23, 1806, as ensign in the 43d regiment of foot, and, as lieutenant in the same regiment, was present at the bombardment of Copenhagen; served in the peninsular war, from its beginning in 1808 to its close in 1814; was severely wounded at the battle of Talavera, and one of the forlorn hope at the storming of Badajoz. He was appointed

captain in the 85th regiment, June 20, 1811; in Sept. 1814, he was a lieutenant-colonel in Major-General Ross's expedition to the United States, and took part in the battle of Bladensburg, and the capture of Washington. He was appointed commander of a battalion of the rifle brigade, Feb. 6, 1824; colonel, May 6, 1831; major-general, Nov. 23, 1841; deputy adjutant-general in 1842; adjutant-general of the forces in April, 1850, and lieutenant-general in 1851. During the Crimean campaign, he led the English light division at the battle of Alma and the battle of Inkerman, and took the command-in-chief of the storming party in the first unsuccessful attack on the Redan. Among the allied armies he became distinguished as a martinet; but, by his personal prowess, and the strict impartiality with which he held the young aristocratic officers to all the duties of field discipline, he became popular among the common soldiers. In 1855 he was created a knight commander of the Bath, and April 2, 1856, gazetted "General in the army, for distinguished service in the field."

BROWN, GOULD, an American grammarian, born in 1791, died at Lynn, Mass., March 31, 1857. The profession of a teacher, which he pursued during many years, and an inclination for philological studies, not only taught him an existing deficiency in educational books, but enabled him to supply it by his "Institutes of English Grammar." This work soon superseded the school grammars formerly in use, and, by its pecuniary success with that of other enterprises, enabled him to fulfil the design he had long before formed of presenting to the world "something like a complete grammar of the English language." This work, entitled "The Grammar of English Grammars," is not more a monument of industry and exact and systematic method, than of thorough comprehension and masterly analysis. It contains a "condensed mass of special criticism, such as is not elsewhere to be found in any language," and, while it is specially characterized by an almost microscopic minuteness of grammatical investigation, it often ascends into the higher region of general principles. His labors, always stimulated and sustained by a sincere and reverential sense of duty, were not remitted, even after his great object had been attained, and are supposed to have hastened his death.

BROWN, HENRY KIRKE, an American sculptor, born at Leyden, Mass., in 1814. His first attempt at art was made at the age of 12, in the portrait of an old man. He pursued his inclinations with difficulty, encouraged only by his mother; and at 18 went to Boston to study portrait painting. Having modelled the head of a lady for amusement, he turned his attention toward sculpture. To obtain means to visit Italy, he became a railroad engineer in Illinois, but lost his health without gaining money. The sale of his works and the aid of friends finally enabled him to pass several years in study in Italy. But upon the conviction that the source of advancement in

art is in the developments of life, he returned to live among those whom his art was to influence. He fixed his residence in Brooklyn, N. Y., and applied himself to the casting of bronze; and has the credit of having produced the first bronze statue ever cast in this country. He has completed several well known works in marble, "Hope," the "Pleiades," the "Four Seasons;" and in bronze, a statue of De Witt Clinton, and the colossal equestrian statue of Washington in Union square, New York.

BROWN, JACOB, an American general, born in Bucks co., Pa., May 9, 1775, died in Washington, Feb. 24, 1828. He was descended from members of the society of Friends; supported himself in early life by teaching school; was also employed for some time as a surveyor of public lands in Ohio; and settling in Jefferson co., N. Y., in 1799, he became one of the pioneers in that part of the country. He next joined the militia service as a militia general in 1812; was soon after appointed brigadier-general in the regular army, and in 1814, major-general; assisted in the defence of Sackett's Harbor in 1813; exhibited much bravery in the battle of Chippewa, in that of Niagara falls, and at the siege of Fort Erie; received the thanks of congress and a gold medal, "emblematical of his triumphs;" and finally, at the termination of the war, continued in the army as major-general, and in 1821 succeeded to the supreme command.

BROWN, JAMES, U. S. senator from Louisiana, born in Virginia, Sept. 11, 1766, died at Philadelphia, April 7, 1835. He received his education at William and Mary's college; studied law, and emigrated to Kentucky, where he rose to distinction, in the midst of formidable competition, at the bar. In 1791 he commanded a company of mounted riflemen, in an expedition against the Indians, near the Wabash; and the next year, when Kentucky was admitted to the Union, Gov. Shelby made him his secretary. Soon after the cession of Louisiana, he emigrated to that state, and in 1813 was elected to the U. S. senate. He was re-elected in 1819, and in 1823 nominated, by President Monroe, minister to France. He fulfilled the duties of that mission till 1829, when he returned to private life.

BROWN, JAMES, a book-publisher of Boston, born in Acton, Mass., May 19, 1800, died March 10, 1855. He began life as a servant in the family of Professor Hedge, of Cambridge, who gave him instructions in the classics and in mathematics. He next entered, as shop-boy, the service of William Hilliard, and in due time was taken into the publishing firm of Hilliard, Gray, and Co. Upon its dissolution, by the death of some of the partners, he became one of the firm of Charles C. Little and Co., generally known as Little and Brown, and remained in this connection until the close of his useful and prosperous life. The special province of this well-known firm was the publication of law books and importation of foreign editions in the general trade, in both which departments the scholarly accom-

plishments and elegant taste of Mr. Brown were conspicuous and of good service in improving the style of book-making in America. Their law business, which was the most considerable in the country, was conducted on the plan of large editions and low prices; the great increase in the numbers of the profession enabling them at the same time to bring out their publications in a style of elegance unknown before. Mr. Brown was a person of an attractive character, a lover of nature, of men, and of books; and he died universally esteemed and regretted. The commemorative proceedings of the literary societies of Boston, on occasion of his death, and notices of his character, are collected in a volume, with a life by Geo. S. Hillard, Boston, 1855.

BROWN, JOHN, an English author, born at Rothbury, in Northumberland, in 1715, died in Sept. 1766. He graduated at Cambridge, and during the rebellion of 1745, acted with much gallantry as a volunteer on the royal side. His works, in prose and verse, are numerous. The most meritorious are, "Essays on the Characteristics of the Earl of Shaftesbury," a tragedy called "Barbarossa," an "Estimate of the Manners and Principles of the Times," which went through 7 editions in one year, a "History of the Rise and Progress of Poetry," and "Thoughts on Civil Liberty, Licentiousness and Faction." A poetical "Essay on Satire," by Dr. Brown, was prefixed to Warburton's edition of Pope. At the period when his prospects were most prosperous (the empress of Russia having invited him to visit St. Petersburg, to assist in framing a plan of public education), his spirits became desponding and distracted, and a state of dejection ensued, which terminated in his death by his own hand.

BROWN, JOHN, a Biblical critic, born in Perthshire, Scotland, 1722, died June 19, 1787. While tending sheep on a farm, he learned to read, and soon mastered the Latin, Greek, and Hebrew languages, having received only a single month's lessons in Latin. At the age of 26 he opened a school, with the intention of becoming a minister of the Scottish church. He sided with the party who seceded from the church soon after; was ordained, and became pastor of a small secession congregation in Haddington. Here he learned the Italian, Spanish, German, Dutch, French, Arabic, Persian, Syrian, and Ethiopic languages. He became professor of divinity in 1768, which office he held during the rest of his life. His principal works are, a "Dictionary of the Bible," a "Self-Interpreting Bible," and a "History of the British Churches."

BROWN, JOHN, the founder of the Brunonian system of physic, born in 1735 at Lintlaws or at Preston, Berwickshire, Scotland, died in London, Oct. 7, 1788. He was the son of a poor farmer, and, while very young, was apprenticed to a weaver; but having previously manifested much aptitude for study at the grammar school of Dunse, the schoolmaster offered to instruct him gratuitously. The

schoolmaster and the parents of Brown belonged to a body of Presbyterian seceders, and young Brown was destined to become a student of theology, and finally a clergyman of the new sect. He soon became familiar with Greek and Latin, and made rapid progress in a knowledge of the Scriptures. While pursuing his studies at the grammar school, he was induced to attend a meeting of the synod, held in the established church at Dunse, and this gave offence to his friends. Placed between the alternatives of ecclesiastical censure or expulsion from the society, he left it at once, and joined the established church. He then became private tutor in a gentleman's family, and acted as an assistant in the grammar school. In 1755 he went to Edinburgh, and after passing through the preliminary classes, entered himself as a student of divinity in the university. For some time he supported himself by private teaching; then resumed his labors as assistant teacher at Dunse, where he remained about a year. In 1759 he returned to Edinburgh, renounced the study of theology, and commenced that of medicine, supporting himself by giving private instruction in Latin to medical students. He soon became well known to all the students, and attracted the attention of the professors. Dr. Cullen employed him as a private tutor in his own family, recommended him to others, and gave him permission to deliver to private pupils illustrations of his own public lectures. Dr. Cullen opposing his nomination to a professorship, Brown began to attack the doctor's medical views, and thus alienated the feelings of his former friend and patron. Brown now married, and received medical students to board in his house, but became involved in pecuniary difficulties. He then proposed to become a medical practitioner, and having quarrelled with the professors at Edinburgh, he took his degree of M. D. at St. Andrew's. In 1780, he published his *Elementa Medicinæ*, which contains the doctrines he propounded in opposition to the views of Dr. Cullen, and for several years he continued to explain these doctrines in public lectures. The excitement produced by this work was very great in all the medical schools of Europe; and in Edinburgh 2 hostile camps were formed among the students, under the names of "Cullenites" and "Brownites." The war of words became general and fierce for several years, and sometimes raged with so much violence, as to lead to collisions among the younger partisans. In 1786, Brown left the scene of these contentions, and went to London, where he opened a private school of medicine, and gave lectures in his own house in Golden square. His family was large, and his habits intemperate; his expenses were greater than his income, and being again involved in debt, he was confined in the king's bench prison during several months, until he was released by the assistance of some of his friends. His doctrines had gained many converts in the medical schools abroad, and he was making preparations to leave Eng-

land for the continent, when his life was suddenly cut short by a stroke of apoplexy.—The publication of his first work was followed in 1781 by "An Inquiry into the State of Medicine, on the Principles of the Inductive Philosophy." In 1787, he published "Observations on the Principles of the Old System of Physic." A complete edition of his works (8 vols. 8vo) was published in London by his son, William Cullen Brown, in 1804. The basis of Brown's medical theory is the doctrine of "excitability." In his view, the human organism, in common with that of animals, mainly differs from inorganic bodies by the property of being excited under the influence of external agents, or the functions of internal organs, peculiar to organic life. The physical external agents which excite the organism to act, are heat, light, air, and alimentary substances; internally, the blood and the humors which are drawn from the blood. Those functions of the organs which produce a similar effect, according to this theory, are muscular contractions, the various secretions of the body, the passions, and the energy of the brain in the processes of thought. These are what Brown terms the stimulating or exciting forces, which, collectively considered, produce life; and when this influence ceases, death ensues. The state of health consists in a proper equilibrium between the exciting forces and the vital principle of excitability within the organism; disease consists in the rupture of this equilibrium. Two kinds of excess may disturb the equilibrium of health, and hence all diseases may be classed under 2 general heads: those produced by an excess of the stimulating forces, and those resulting from an insufficiency of stimulation. The one are called "sthenic" (Gr. *σθενος*, strength), and the other "asthenic," from the want of force. The treatment consists in diminishing the excess of stimulus in one case, and supplying that which is deficient in the other. His doctrines became very popular for a time all over Europe. Girtanner spread them in Germany, and Rasori in Italy. Broussais developed similar views in another form, 80 years later, in France, attributing the origin of all diseases to inflammatory action in the organism, and substituting the word "irritability" in lieu of "excitability," but adopting Brown's division of all diseases into 2 classes, "sthenic and asthenic." The exaggerations of these 2 schools have lost their influence on many minds, but the words which mainly characterized their doctrines are still in common use in books of medicine. Stimulants and contra-stimulants, irritability and excitability, sthenic and asthenic, are terms as common now as phlogistic and antiphlogistic in the medical vocabulary.

BROWN, JOHN, a merchant in Providence, R. I., one of 4 brothers, Nicholas, Joseph, John, and Moses, who were partners in business, born at Providence in 1786, died there in 1803. They were descended from Chadd Brown, and were all wealthy and enterprising; but John, who was

the third in age, is said to have been "a man of magnificent projects and extraordinary enterprise." He was the leader of the party which destroyed the British armed schooner, the *Gaspee*, in Narraganset bay, in 1772; was the first merchant in Rhode Island who engaged in commerce with the East Indies and China. He regarded the interests of learning, and laid the corner-stone of the first building of Rhode Island college, now called Brown university, to which he was one of the largest contributors. He was treasurer of the institution for 20 years, and made it repeated donations. In 1799 he was elected a member of congress, and served there 2 years.

BROWN, JOHN, an American revolutionary officer, born at Sandisfield, Berkshire co., Mass., Oct. 19, 1744, died on the battlefield, Oct. 19, 1780. He was graduated at Yale college in 1771, and officiated as king's attorney at Caughnawaga, N. Y. In 1774, he went into Canada, disguised as a horse trader, to excite the people to unite with the other colonies in the revolution. He was with Ethan Allen at the capture of Ticonderoga, and on Sept. 24 took Fort Chambly. He was also at Quebec when Montgomery fell. In 1776, he was promoted to the rank of lieutenant-col., and during the next year was conspicuous on the shores of Lake George. In 1778, he was made a member of the general court, continuing to act with the militia of Berkshire. He was killed by the Indians while marching to rescue Schuyler in the Mohawk valley campaign.

BROWN, JOHN, professor of exegetical theology to the United Presbyterian church, born in 1785, at Whitburn, Linlithgowshire. His father was also a minister of the burgher section of the secession church. He was ordained pastor of the burgher congregation at Biggar in 1806. In 1821 he removed to the care of the united secession church, Edinburgh, and afterward succeeded Dr. James Hall in the ministry of the Broughton-place church. The burgher and anti-burgher seceders having come together in 1820, under the name of the united associate synod, he was chosen one of their professors of divinity in 1835, and in the religious questions which have agitated the mind of Scotland for the last 80 years, he has been looked up to as a leader. He took the part of the parent society on the division in the British and foreign Bible society, concerning the circulation of the Apocrypha, and the voluntary side on the question of church establishments. Having, by a residence within the royalty of the city of Edinburgh, become liable to the payment of an annuity tax, which was levied upon him, for the support of the city ministers, he refused to pay, and suffered his goods to be distrained; and in reply to the proceedings of the civil authorities, he preached and published 2 sermons on the "Law of Christ respecting Civil Obedience, especially in the Payment of Tribute," which, with notes and additions, became finally a thick octavo volume. Several other theological works have

been published by him since 1840. The questions connected with the doctrine of the atonement having attracted a more than usual attention in Scotland, some of the members of his connection were dissatisfied with his expression of his views on that subject, and a charge was brought against him in 1845 in the synod, but it was found "not proven," and the synod passed a vote of confidence in Dr. Brown. At the commencement of April, 1856, his congregation celebrated the 50th anniversary of his pastorate.

BROWN, JOHN NEWTON, D.D., an American Baptist clergyman, and historian, born at New London, Conn., June 29, 1803. He prosecuted his studies at the literary and theological institution, now Madison university, Hamilton, N. Y., graduating with the highest honors of his class. He immediately entered upon his duties as a preacher in Buffalo, N. Y., where he remained one year; afterward removed to Providence, R. I., to assist the Rev. Dr. Gano, pastor of first Baptist church in that city. Mr. Brown preached afterward in Malden, Mass., and in Exeter, N. H. His ministry in all those places was highly acceptable and useful. While at this latter place, he commenced his literary labors by editing the "Encyclopedia of Religious Knowledge" (1835), a work which has been republished in England, and which is received with favor even at the present day. This literary undertaking he completed before he reached the age of 35. In the year 1838, he became a professor of exegetical theology and ecclesiastical history in the New Hampton theological institution, N. H., where he remained until 1845, when, his health failing, he was obliged to seek a more congenial climate in one of the southern states. Mr. Brown now resides in Germantown, near Philadelphia. For several years past he has been engaged in the preparation of an elaborate history of the church, with a view to illustrate more particularly the progress and development of Baptist principles from the earliest period to the present time.

BROWN, JOHN W., an American author, born in Schenectady, N. Y., Aug. 21, 1814, died at Malta, April 9, 1849. He graduated at Union college in 1832, and was settled as an Episcopalian minister at Astoria, N. Y. In 1838 he commenced the Astoria female institute, which he conducted for 7 years; in 1845 he became editor of the "Protestant Churchman." He was the author of the "Christmas Bells, a Tale of Holy Tide, and other Poems," and of several prose tales of a religious character.

BROWN, LANCELOT, an English landscape gardener, born at Kirkcubright, in Northumberland, in 1715, died at Huntingdon, in 1773. He was called "Capability Brown," from his constant use of that word in reference to sites submitted to his judgment. In his early life he was employed in the grounds and gardens at Stowe, and thence went to London. His merit consisted in imitating nature and abandoning the clipped and stiff formality prevalent at the time.

BROWN, MOSSES, a merchant of Providence, R. I., the youngest of the 4 distinguished brothers of that place, born in Sept. 1788, died Sept. 6, 1836. He was brought up in the family of his uncle Obadiah, a wealthy merchant, whose daughter he married in 1764. After being engaged for 10 years in commercial pursuits, he retired in 1773, and at the same time forsook his ancestral connection with the Baptist denomination, and joined the society of Friends, of which he remained throughout his long life a useful and influential member. He manumitted his slaves in 1773; was one of the founders of the abolition society of Rhode Island, and an active and liberal supporter of the Rhode Island peace and Bible societies. He was also a munificent patron of the yearly meeting boarding school in Providence. Although of a delicate constitution, his activity and interest in benevolent enterprises continued throughout a life protracted to the age of 98 years. He made his will at the age of 96.

BROWN, MOSSES, a merchant of Newburyport, Mass., born Oct. 2, 1742, died there Feb. 9, 1827. Having accumulated a large estate, he managed it with kindness and benevolence toward the poor, and particularly toward his own debtors; but his predominant aim was to provide the opportunity for obtaining an education for meritorious candidates for the Christian ministry. For this purpose he gave at different times about \$40,000 to the theological institution at Andover. He also made large donations to many religious and benevolent societies and institutions.

BROWN, NICHOLAS, the principal patron of Brown university, born at Providence, R. I., April 4, 1769, died Oct. 27, 1841. He was the son of Nicholas Brown, one of the "4 brothers;" was liberally educated at the R. I. college, and at the age of 23 inherited an ample fortune. He now commenced the career of a merchant, engaging in operations extending over almost every clime, and in the diversified risks to which he was exposed, affording ample opportunities to test the strength and sagacity of the mind in which they originated. But he was found fully equal to every emergency which arose in the difficult times over which his commercial enterprises extended, not only those of the ordinary perils of the seas and fluctuations of distant markets, but others arising out of the wars of the French revolution, and out of the wars and the laws of our own country, which at times had almost caused the American flag to disappear from the ocean. In all this period his mercantile reputation stood unaffected. Almost to the close of his life he was accustomed to the daily transaction of business at his counting room, and was in the constant habit of mingling in the affairs of the active commercial world. From an early period he had particularly connected himself with efforts for the increase of knowledge, and the diffusion of education. In 1796 he was chosen secretary of R. I. college, which office he retained till 1825, when he was

elected to the board of fellows. When first made secretary he presented the college with \$5,000 and a good law library, and in consequence of so liberal a benefaction the name of the college was changed to that of Brown university. In 1822 he built a second college edifice entirely at his own expense. In 1829 his commercial house purchased a set of apparatus adequate for any purpose of scientific illustration. He soon after gave \$10,000 toward a fund of \$35,000 for the use of the library, and erected another building called "Manning Hall," after the first president. In 1839 he made other donations; and in all it is estimated that he bestowed the amount of \$100,000. He also contributed largely to the Providence Athenæum, and gave, or lent without expectation of repayment, thousands of dollars annually to aid in the building of churches and the endowment of colleges in every part of the country.

BROWN, OBADIAH, a manufacturer of Providence, R. I., only son of Moses Brown, born July 15, 1771, died Oct. 15, 1822. He engaged in business with William Almy, and they associated with them Samuel Slater, who introduced into this country the spinning of cotton by machinery, on the principle of Arkwright, under the firm of Almy, Brown, and Slater. The manufacture extended vastly in their hands, and they became at the same time men of great wealth, and the source of the support of a large population. Mr. Brown became a Quaker; and as he had no children of his own, became an almoner in the distribution of his wealth for the benefit of deserving objects of public and private charity. His benefactions were not confined to his own denomination, but were often intended to assist the worthy enterprises of other Christian bodies. His principal donations were, however, to the boarding school or college of Friends, at Providence, to which he contributed at its original foundation, and left \$100,000 by his will, to form a permanent charitable fund.

BROWN, ROBERT, an English Puritan theologian, and founder of the sect of Brownists, born at Northampton about 1550, died in 1630. Of a distinguished family, and a relative of the lord treasurer Cecil, he was educated at Corpus Christi college, Cambridge, and as a preacher, schoolmaster, and lecturer at Islington, gained reputation by vehement attacks upon the hierarchy and liturgy of the English church. He became pastor to a congregation of seceders at Norwich, and assailed not the doctrines but the discipline of the church, and contended for ecclesiastical independency. The numerous judicial prosecutions which he incurred multiplied his adherents and increased his fame, but obliged him to leave the kingdom. At Middleburg, in Holland, he established a church upon the principles laid down in his work on the "Life and Manners of true Christians;" but dissensions arising, he returned to England, submitted penitently to the established church, and obtained a rectory in Northamptonshire. His life was im-

moral, and he became again embroiled with the authorities, and died in Northampton jail, boasting on his death-bed that he had been imprisoned 32 times. His principles gathered strength after his death, and the Brownists, after being reformed by Robinson, became known as the Independents.

BROWN, ROBERT, an English botanist, born at Montrose, Dec. 21, 1772, died in London, June 10, 1858. He was appointed botanist in the Australian expedition of Capt. Flinders, which sailed in July, 1801. Soon after their arrival in Australia, Flinders was obliged to return home with his ship, and was captured by the French, and detained several years as prisoner of war. Brown remained in New Holland, accompanied by the flower painter, Frederic Bauer, visiting the coasts now occupied as colonial settlements, but then in a wild state and uninhabited by Europeans. They also visited Van Diemen's Land, and many of the islands of Bass's strait, returning to England in 1805, with a rich collection of plants, comprising more than 4,000 different species indigenous to those regions of the globe. On his return to London, he was appointed conservator of the library and botanical collections of Sir Joseph Banks, and labored several years at the methodical arrangement of the numerous species of plants collected in New Holland. An outline of this labor was published in 1810, under the title of *Prodromus Flora Nova Hollandiæ*; but he afterward deemed it too imperfect to merit the attention of the public, and endeavored to suppress it by destroying all the copies he could find. It had, however, been reprinted by Oken, in his *Isis*, and Nees von Esenbeck published an enlarged edition of it at Nuremberg, in 1827. Brown published his "General Remarks on the Botany of Terra Australis" in London, 1814, and a *Supplementum primum Flora Nova Hollandiæ*, in 1830. He also described and classified with care the different species of plants collected, between the years 1802 and 1815, by Horsfield in Java, and those collected by Salt in Abyssinia; by Oudney and Clapperton in the interior of Africa; and such of those as were saved from the collection of Christian Smith, in the unfortunate expedition of Tuckey to the mouth of the Congo. Sir Jos. Banks having bequeathed to Brown a life interest in his library and collections of natural history, which were eventually deposited in the British museum, he was appointed, in 1827, keeper of the botanical department of that institution, and retained this position until his death. Vegetable physiology is indebted to Brown for several important discoveries. He first spoke of the peculiar movement of the molecules of pollen in plants, which is known by his name; and was the first to demonstrate that these molecules, on quitting the anthers, penetrate, through the style, down to the ovula below. On the death of the bishop of Norwich, in 1849, he was elected president of the Linnæan society.

BROWN, SIR SAMUEL, an English engineer,

born in London in 1776, died March 15, 1852. He entered the navy at 18, and was made commander in 1811, and a retired captain in 1842. He brought into use both chain cables and iron suspension bridges. Although the idea of employing iron cables in place of those made from hemp had been previously suggested in 1771, it was not put into practice until after a series of experiments under the direction of Capt. Brown. In the same manner iron suspension bridges had been in use both in Europe and America, but they were regarded as unsafe except for very short spans, before his improved method of constructing the chains. He had them made of long bars of flat or round iron pinned together by short links and bolt pins. He was knighted in 1885.

BROWN, SAMUEL, a Scottish chemist and poet, born at Haddington, Feb. 23, 1817, died in Edinburgh, Sept. 20, 1856. In childhood, his heartiness in play, strong attachment to friends, and faculty for grasping the problems of physical science, on which he sometimes hazarded original and startling hypotheses, foreshadowed the bent and the intensity of his future character. In 1832, he entered the university of Edinburgh as a student of medicine, with reference, however, only to the scientific studies in that department, and quickly made chemistry his favorite and engrossing pursuit. In the ultimate questions of this science—the nature of atoms, and the laws of atomic action—he had already interested himself, and the initial conception of an isomerism far more extensive and profound than had before been taught, had already assumed definite form in his thoughts, when, in 1837, he visited his eldest brother in St. Petersburg, preparatory to studying at Berlin, under Mitscherlich, the discoverer of isomerism, and the able expounder of the accepted doctrine of isomerism. Stricken down in Russia by typhus fever, he returned to England in the following year with his plan unfulfilled, his health shattered, and bearing within him the latent germs of fatal disease. The death of his father at this time, whom he had loved with peculiar tenderness, and of whom he afterward wrote a charming biography, added to his desolation. He graduated from the university of Edinburgh with extraordinary attainments, began his public career by delivering, in 1840, in association with his intimate friend, Edward Forbes, a course of lectures on the philosophy of the sciences, and having established among his auditors, as he had before among his teachers, the conviction that he was destined to great achievement, renounced all else that he might have won, to devote himself to the slow experimental realization of a great scientific conception. He contemplated results as great for atomics as Galileo and Kepler had gained for astronomy; stated his theory in an abstract form, which fascinated the regards and won the acceptance of Sir William Hamilton, and with a far-off possibility of success, with visions of long-sought truths opening at

last brightly before him, imposed upon himself a life of silent and solitary toil. Wherever he went, the laboratory was sent in advance, and first provided for. At Portobello, where he resided several years, it occupied the 2 most eligible rooms in the house, and was ever overflowing and encroaching elsewhere. The care of a sister provided tea, salt fish, and ship-biscuit, the only food that he wished, and his hours of sleep were regulated less by the demands of nature than of some prolonged and elaborate process. Yet his disposition was not ascetic; his buoyant spirit flourished under this discipline, and he found hours for meditation on the highest aspects and relations, not only of nature, but of man. In the circle of his friendships he numbered some of the greatest and best men of the age, and his conversation threw its spell over persons as diverse as Jeffrey, Chalmers, Carlyle, Archdeacon Hare, De Quincey, Harriet Martineau, R. W. Emerson, and Margaret Fuller. In 1843 the chair of chemistry in the university of Edinburgh became vacant, and though the researches of Dr. Brown were not so complete as he desired ere bringing them before the public, he resolved, in accordance with the wishes of his friends, to declare himself a candidate for it. His claims could rest only upon what he had achieved in the special sphere to which he had devoted himself, and though his experiments had convinced him of the isomerism of carbon and silicium, and he deemed himself prepared to present experimental proof of the transmutability of the one into the other, yet the announcement was premature. The proof was found and admitted by himself to be incomplete, and he retired from the field. Disappointed in his hope of attaining so honorable a position, he was still more grieved to discover that his cherished work was further from completion than he had thought, and to find that to the loneliness and failure of sympathy which he had before endured, were now to be added obloquy and distrust. Most who did not know him personally supposed him to have been pursuing a wild dream with alchemistic enthusiasm. Yet, with full faith in his idea, he set himself anew to the task of its practical elucidation, and although as a chemist he appeared not again before the public, he bore to the end the self-chosen burden of his scientific life. He labored on, during the respites of a painful malady, which not till after a 7 years' course wasted him away. His memoranda and journal indicate that he had obtained results far in advance of those which he had prematurely claimed in 1843, and it was his own latest and firm belief that a few months more of health and strength would have enabled him to lay all formally and critically before the scientific world. It is now probable that his papers, in the hands of others, cannot be made valuable, and that he will, therefore, be known in the realm of science as a thinker and seeker, rather than discoverer. Yet, in several writings, he has left indications of the brilliancy and

power of his intellect. In 1849 he delivered in Edinburgh a series of lectures on the history of chemistry, tracing its progress from its playful childhood among the Greeks, through the oriental and mediæval alchemists, with most fascinating sketches of Roger Bacon and Paracelsus; passing thence through the epoch of Stahl and Priestley, till the young and unfortunate Lavoisier changed the whole form of chemical science, opening a new path to all succeeding philosophers. In 1850, he published the "Tragedy of Galileo," containing passages of great beauty, but said to be much inferior to his impromptu conversations on the character and doom of the great astronomer. Many of his lectures and essays have been collected since his death, under the title of "Lectures on the Atomic Theory, and Essays Scientific and Literary." They embrace a great variety of subjects, and among them are a tender and friendly memoir of David Scott, the painter, and perhaps the finest critique on George Herbert's poetry that was ever penned. Some of his papers, especially that on the "Philosophy of Prayer," entitle him to a high place among theosophical thinkers. Many of his poems are in sonnet, in partial accomplishment of one of his great schemes, which was a poetic history of all the sciences in a series of sonnets, each embodying an era of development as represented in a race, or by an individual. His prose and verse are almost equally marked by the mixture of poetic feeling and calm reasoning. The fascination of his personal character is proved by the impression which he made upon his associates, who regard his works as utterly inadequate to convey an idea of his greatness. The spirit with which he gave up his life to a daring and arduous scientific quest, conscious of what he renounced, and foreseeing the trials and difficulties, and a part, at least, of the disappointments and sorrows which intervened between him and the goal for which he aimed, is seen in the cross with the inscription, "Perfect through suffering," which he early and roughly sketched to be the presiding symbol of his laboratory.

BROWN, TARTON, a captain in the revolutionary war, born in Barnwell district, S. C., in 1754, died in 1846. He served throughout the war, chiefly under Col. William Harden, and has left an interesting memoir of his experience, containing much original information concerning the events of the time in the two Carolinas.

BROWN, THOMAS, an English satirist, born in Shropshire in 1663, died in 1704. He was educated at Oxford, and became for a short time master of the free school at Kingston-upon-Thames. He wrote a great deal in prose and verse, chiefly satirical and personal pieces. The highest as well as the lowest characters were the objects of his satire, which is sharp, though coarse. His first pamphlet, "The Reason of Mr. Bayes changing his Religion," published in 1698, was a strong personal attack on Dryden, who had become a convert to the Catholic faith

a little before. A selection from his productions in 4 volumes, with engravings, appeared soon after his death.

BROWN, THOMAS, a Scottish philosopher, born at Kirkmabreck, near Dumfries, Jan. 9, 1778, died at Brompton, near London, April 2, 1820. He was educated with the greatest care by his mother. He is said to have learned all the letters of the alphabet at a single lesson, and in the different schools which he attended he made remarkable progress, especially in classical literature. In his 15th year he was presented by Dr. Currie, the biographer of Burns, with the recently published 1st volume of Dugald Stewart's work on the philosophy of the human mind, which he read with admiration, making however acute criticisms upon it. Attending Stewart's class the next winter, at the close of one of the lectures he ventured to state to the distinguished philosopher an objection respecting one of his theories. It was the opinion of Stewart that in sleep the operation of the will and of the faculties dependent on it are suspended, yet he also held that memory depends upon attention, which is the creature of the will. The query propounded by Brown was, How then do we remember our dreams? Stewart listened to him patiently, then read to him a letter which he had just received from the celebrated M. Provost of Geneva, containing the same objection. This was the commencement of a lifelong friendship between the 2 metaphysicians. Brown studied and practised medicine, without however giving all his attention to it, and divided his leisure between the pursuits of poetry and philosophy. He published in 1798 his "Observations on the Zoonomia of Dr. Darwin," which attracted attention for the acuteness with which it pointed out inconsistencies, and is interesting as containing the germ of his theory of causation and of the principles by which he was guided in his later philosophical inquiries. There was at this time in Edinburgh a brilliant circle of young men, by some of whom the "Edinburgh Review" was soon to be established. Brown was accustomed to pass his evenings in conversational discussions with Erskine, Brougham, Reddie, Birkbeck, Leyden, Seymour, Horner, Jeffrey, Sydney Smith, and others, with most of whom he was associated in the society called the "Academy of Physica." He contributed several articles to the early numbers of the "Edinburgh Review," one of which was on the "Philosophy of Kant," a subject of which he knew only what he had derived from fantastic French accounts, and the only merit of the article was that it displayed perhaps more knowledge of Kant than was at that time possessed by anybody else in Great Britain. In 1803 he published a collection of his poems in 2 volumes, many of which had been written while in college, and which exhibit rather a taste than a talent for poetry. A local controversy induced him to publish an examination of Hume's theory of the relation between cause and effect, the object of which

was to show that, however vulnerable the doctrine of Hume might be in a metaphysical point of view, it was far from leading to the fatal consequences which had been attributed to it. This work was applauded by Horner in an able article in the "Edinburgh Review," and was pronounced by Mackintosh the finest model of philosophical discussion since Berkeley and Hume. It was enlarged in subsequent editions, and published in 1818 under the title of an "Inquiry into the Relation of Cause and Effect." In 1808 Stewart, enfeebled by age, required a temporary absence from professional duties, and Brown was appointed to supply his place in lecturing before the class in moral philosophy. He lectured again during several weeks the next year with such success that many of the distinguished men of the capital came to hear him, and in 1810, at the request of Stewart, he was formally appointed adjunct professor of moral philosophy. It was his custom to pass the summers in some rural retreat for exercise and meditation, and to defer the composition of his lectures to the evening before the day on which he was to deliver them. In his philosophic character he has been truly described as an unfaithful disciple of the Scottish school, rebelling against his masters upon many capital questions. Reid and Stewart had laboriously collected facts, and scrupulously described phenomena, without wishing to make systematic classifications of them. Brown blames this timidity, and seeks to simplify facts by systems, reducing them to the smallest possible number of causes or classes. Reid thought that he had discovered the source of modern scepticism in the hypothesis of intermediary ideas or images between the soul and body. Brown maintains that this hypothesis has been generally rejected by modern philosophers, with the exception of Malebranche and Berkeley, and that in attributing it to Descartes, Hobbes, Locke, and others, Reid was deceived by an incorrect language, translating a metaphor into a serious doctrine. Reid affirms the existence of a special faculty of perception, by means of which we know external objects immediately and directly. Brown rejects this assertion as gratuitous, as explaining nothing, and therefore as unphilosophical, and accounts for our knowledge of objects by the sensation of resistance, and the conception of a cause excited by this sensation. He extenuates the scepticism of Hume relative to the external world, maintaining that the difference between Hume and Reid is verbal rather than essential, the former laying stress upon the dogma that we cannot prove the existence of external things, and the latter upon the dogma that we ought to believe their existence though we cannot prove it, and each reluctantly admitting the position of the other. The gravest difference was with reference to moral freedom. Reid and Stewart had most distinctly recognized the free activity of the will in distinction from desire which is passive and necessary. Brown in his lectures keeps silence upon this capital question, but in his

treatise on the relation of cause and effect declares in almost the same terms as Condillae that will is but desire accompanied with an opinion that the effect is going to follow. All psychological phenomena are divided, in the system of Brown, into external and internal states, the former having reference to sensations, the latter to the intellect and emotions. Instead of the diversity of intellectual faculties which had been introduced by his predecessors, he admits but two: simple suggestion, or the reproduction of absent objects, and relative suggestion, or the perception of relations between ideas. To the former he refers conception, imagination, memory, and habit; to the latter, judgment, reason, abstraction, and generalization. The emotions he classifies as immediate, retrospective, and prospective, according as they refer to the present, past, or future. In this portion of his philosophy he gives a complete enumeration and a profound analysis of the passions, and of the sentiments of beauty and moral good. The reputation of Dr. Brown rests chiefly upon his lectures, which were first published after his death. They offer many exact descriptions and delicate analyses, are written in an exuberant and often eloquent style, and are enriched with numerous happy quotations from the poets. His philosophy is variously estimated, but has been severely judged by Sir William Hamilton. During the latter years of his life he published several poems, the principal of which is the "Paradise of Coquettes," which added nothing to his reputation. He repaired to London by a sea voyage in 1820, in the hope of benefiting his health, which had become suddenly broken; but his illness increased, and became fatal soon after his arrival. His personal character was marked by a calm enthusiasm, and the utmost kindness and delicacy of mind.

BROWN, WILLIAM LAWRENCE, minister of the English church at Utrecht, and principal of Marischal college, born at Utrecht, where his father was pastor, Jan. 7, 1755, died May 11, 1830. His father returned to Scotland in 1757, and he was sent to the grammar school and university of St. Andrew's, afterward became a student of divinity in 1774, removed to the university of Utrecht, where he combined with the study of divinity that of civil law. In 1777, on the death of his uncle, Dr. Robert Brown, the magistrates of Utrecht offered him, and he accepted, the pastoral charge of the English church in that city. He was licensed and ordained by the presbytery of St. Andrew's, and admitted minister in 1778. Between 1788 and 1793 he took several prizes offered for public competition by different learned bodies in Holland, producing, among others, a disputation in Latin on the "Origin of Evil," and one on the "Natural Equality of Man," which was printed in Edinburgh in 1793, and had a large sale. He was also made professor and then regent of the university of Utrecht, but in Jan. 1795, was obliged to fly

the country, on the approach of the French, in an open boat, with his wife, 5 children, and some other relations, with whom he reached England after a stormy passage. In London he was warmly welcomed, and soon afterward, by the magistrates of Aberdeen, made principal of Marischal college. He became a conspicuous member of the church, and upon the first competition for the Burnet prize, his essay on the "Existence of a Supreme Creator" obtained the first place. It was published at Aberdeen in 1816. He afterward wrote "A Comparative View of Christianity and of the other Forms of Religion which have existed and still exist in the World, particularly with regard to their Moral Tendency," Edin. 1826.

BROWN COAL, one of the 3 great families into which coals are divided by mineralogists, and which are again subdivided into many subordinate varieties. In England, it is also called Bovey coal, from Bovey, near Exeter, where it is principally found. The German depositories of brown coal are mainly in Hesse, Thuringia, the valley of the Rhine, the Westerwald (a hill-chain of W. Germany, between Westphalia and Nassau) and in Saxony. The mineral is also found in Alsace. Vegetable matters are met with in various stages of their conversion into mineral coal. In the formations of the present period they are found in great collections of peat, which are sometimes seen in beds alternating with others of sand and of clay. In the tertiary strata these vegetable collections occur in beds interstratified with others of limestone and the various rocks of this period. In some instances the plants are little altered, so that the species are easily recognized by the structure of the leaves and fruit. The stems are flattened, and cross each other in all directions. The woody fibre has become more or less impregnated with bitumen, so that it burns with the peculiar smoke and flame of that substance. This material is called lignite, and sometimes brown coal. Beds of it are worked for fuel in upper Hesse. Another variety of brown coal is more altered in structure, so that its vegetable character is more indistinct, the beds presenting stratified bodies of dark, nearly black substance, with an earthy fracture. The lignite is sometimes seen mixed in the same specimen. This variety of brown coal is worked at Meisner, near Cassel. These varieties make but a poor quality of fuel, often containing from 30 to 48 per cent. of water. A large proportion of this, however, may be expelled by drying, though even then 8 per cent. or more may be reabsorbed. The amount of ash varies in the different qualities from less than 1 to more than 50 per cent. Sulphates of lime, potash, and iron often occur as impurities, and nitrogen is sometimes met with to the extent of 15 per cent. In 21 different analyses of brown coal by different chemists, the proportion of carbon is found to vary from 50 to 70 per cent. In the 15th volume of the 2d series of the "American Journal of Science,"

1858, Pres. Hitchcock describes an interesting deposit of brown coal which occurs at Brandon, Vt., in the midst of the clays and ochres of one of the numerous hematite iron ore beds which accompany the range of the metamorphic slates and limestones along the western base of the Green and Hoosick mountains. The carbonaceous deposit constitutes a bed 20 feet thick, which is found close to the surface, and is at another point cut by a shaft at the depth of nearly 100 feet; but, like the other materials that make up these deposits, its form and dimensions appear to be very irregular. This bed consists principally of a substance intermediate in appearance between peat and bituminous coal. It is of a deep brown color, with indistinct traces of organic structure, except in the lignite and the fossil fruits contained in it. It burns with a bright yellow flame, without any bituminous odor, and is employed for heating the boilers of a steam engine on the spot. Fragments of lignite are met with in it, which are brittle, and admit of a polish; some of them are a foot and a half in diameter, and display the woody structure, as well as the attached bark. They appear to belong to the exogenous or dicotyledonous class of plants, and have evidently been transported and worn by water. The fruits generally resemble nuts; but neither these nor the seeds accompanying them have been determined. Pres. Hitchcock regards this deposit as placing the hematite beds in the group of the upper tertiary; but as this ore is met with in some localities in veins or beds, in the mica slate, and not differing from that in the brown lignite deposits near by, as may be seen at Leibert's gap, in the Lehigh mountain, this generalization can hardly yet be admitted as fully established. The oil extracted from brown coal, *oleum ligni fossilis*, is used for medical purposes. (See COAL.)

BROWN-SÉQUARD, EDWARD, an eminent living physiologist, was born in the island of Mauritius, in the year 1818. His father, Edward Brown, was a native of Philadelphia, and at one time commanded a merchant vessel in the American marine. He was lost at sea, in an attempt which he had volunteered in an old and badly found vessel to procure provisions for Mauritius, at that time suffering under famine. His mother, from whom he derives the name Séquard, was a French woman. Young Brown-Séquard was carefully educated in his native island. In 1838 he went to Paris to complete his studies, and received there the degree of M. D. from the faculty in 1840. Since that time he has devoted his attention mainly to experimental physiology, and the number and importance of his researches have placed him in the foremost rank of living investigators. He has had a prize awarded him 5 times by the French academy of sciences, and he has twice received a part of the queen's grant for the encouragement of science from the royal society of London. He has visited the United States several times, and has delivered short courses

of lectures before various scientific bodies, illustrating his novel doctrines by the most skilful and delicate vivisections. His researches cover a large extent of ground, and relate to a variety of important and interesting questions. His experiments on the blood give great support to the new doctrine that the fibrine of that fluid is an excrementitious product, and not subservient to nutrition. All the life-giving effects of the natural blood he has produced by the transfusion of defibrinated blood. By the injection of oxygenated and defibrinated blood the irritability of the muscles was restored some time after the occurrence of post-mortem rigidity, and the blood returned by the veins venous in color and containing fibrine. Defibrinated and oxygenated, it was again injected by the artery, and thus the same blood was used for hours in maintaining the irritability of the muscles. Arterial blood, according to Brown-Séguard, is subservient to nutrition, and maintains the irritability of the muscles; venous blood is necessary to produce muscular contraction.—By his experiments on animal heat the temperature in mankind is placed at 103° F., several degrees higher than by previous observers. When animals are asphyxiated their temperature at the time exerts a great influence on the duration of life; thus, of 4 rabbits experimented on, the temperature at the time they were asphyxiated was respectively 103°, 95°, 86°, 77° F., and the duration of life was respectively 6, 9½, 10, and 14 minutes. Previous observers had noted that certain poisons cause a rapid diminution of the animal temperature; according to Brown-Séguard, when the animal heat is maintained by artificial means, the toxic action is much diminished. Thus, if 2 animals are subjected to equal doses of the same poison, and one is placed in a temperature of 50° F. and the other of 88° F., the first will probably die with great loss of animal heat, the last will recover.—Some of the most difficult, as well as most interesting, researches of Dr. Brown-Séguard relate to the physiology of the spinal cord. The great discovery of Sir Charles Bell of the respective sensitive and motor functions of the anterior and posterior roots of the spinal cord, directed the general attention of physiologists to that subject. After numerous, and oftentimes apparently contradictory, experiments, the conclusion was generally acquiesced in that the posterior columns of the cord are sensitive, and convey sensations to the brain; that the anterior are motor, and convey the influence of the will to the voluntary muscles; and that the gray matter of the cord serves merely to reflect impressions from the sensitive to the motor nerve roots. As the result of numerous ingenious experiments, Brown-Séguard concludes that the sensitive fibres do not communicate directly with the brain, but convey impressions to the gray matter of the cord, by which they are transmitted onward to the brain, and that their decussation or crossing takes place in the cord itself, at or below the point at which they en-

ter, not in the cerebrum or medulla oblongata. On the other hand, the anterior or motor fibres pass on directly to the brain, effecting their decussation in the medulla oblongata; the gray matter receives the impressions, conducts them to the brain, or reflects them upon the motor nerves, but is itself insensible to ordinary stimuli. These views enable us to understand some rare and curious facts in pathology which otherwise would remain inexplicable. Other researches of Brown-Séguard relate to the muscles, to the sympathetic system of nerves, to the effect of the removal or destruction of the supra-renal capsules in animals, &c. In May, 1858, Dr. Brown-Séguard delivered a course of lectures before the royal college of surgeons, at London, which attracted much attention.

BROWN SPAR, a name given to dolomite, the magnesian carbonate of lime, when this is of a brown, or reddish-brown color, from a small percentage of oxide of iron, or oxide of manganese. Crystals of spathic iron are sometimes called by the same name.

BROWN UNIVERSITY, formerly RHODE ISLAND COLLEGE, a seat of learning in Providence, R. I., founded by the Baptists, about the middle of the last century. In 1707, the Philadelphia association, composed mostly of Baptist churches in Pennsylvania and New Jersey, was formed, for the purpose of promoting the welfare of the Baptist denomination in America. At an early period, these churches thus associated projected plans for the education of a suitable ministry, the restrictions of denominational government rendering it humiliating and even difficult for their young men to be educated in the institutions of learning then in existence. In 1762 this association, at the special instigation of the Rev. Morgan Edwards, a distinguished Welsh clergyman of Philadelphia, formed, says Backus, the design of establishing in the colony of Rhode Island, "under the chief direction of the Baptists, a college in which education might be promoted, and superior learning obtained, free from any sectarian religious tests." The leader selected for this important work was the Rev. James Manning, a native of New Jersey, and then recently a graduate at Princeton. In July, 1763, he accordingly visited Newport, then at the height of its commercial prosperity, and proposed the subject of his mission to several gentlemen of the Baptist denomination, among whom were the Hon. Samuel Ward, governor of the colony, the Hon. Josias Lyndon, who was afterward governor, Col. John Gardiner, deputy governor, and twelve others of the same persuasion. They readily concurred with the proposal, and at once entered upon the means necessary for the accomplishment of the object. After various struggles and difficulties, a charter, reflecting the liberal sentiments of the people in matters of religion, was obtained from the legislature in February, 1764, "for a college or university in the English colony of Rhode Island and Providence Plantations, in New

England, in America." One of the provisions of this charter is as follows: "And furthermore, it is hereby enacted and declared, that into this liberal and catholic institution shall never be admitted any religious tests; but, on the contrary, all the members hereof shall forever enjoy full, free, absolute, and uninterrupted liberty of conscience; and that the public teaching shall, in general, respect the sciences, and that the sectarian differences of opinions shall not make any part of the public and classical instruction." The government of the college is vested in a board of fellows, consisting of 12 members, of whom 8, including the president, must be Baptists; and a board of trustees, consisting of 36 members, of whom 22 must be Baptists, 5 Friends or Quakers, 4 Congregationalists, and 5 Episcopalians; this proportion representing the different denominations then existing in the state. The instruction and immediate government of the college rest in the president and board of fellows. In the autumn of the year in which the college was established, its instructions were commenced at Warren, under the direction of Mr. Manning, who was formally elected its president in Sept. 1765. With him was associated soon after, as tutor, Mr. David Howell, also a graduate from Princeton. A local contest for the seat of the college was finally terminated in favor of Providence, and accordingly in May, 1770, the president with his undergraduates removed thither. The work of instruction went on with regularity till the revolution, 1777-1782, during which period the college was occupied by the state militia, and also by the troops of Rochambeau. In 1786 the president was elected to congress, where he gave his influence for the establishment of the constitution, still retaining his college office. His death occurred in 1791, in the 58d year of his age. Dr. Manning may in one sense be regarded as the founder of the college, for although the plan of it originally emanated from the Philadelphia association, as stated in the commencement of this account, it was nevertheless owing to his personal influence and exertions that it was happily matured, and, from a state of infancy and trial, nurtured and developed, until it reached, before the termination of his labors, a position of comparative affluence and respectability. "He had," says his biographer, Professor Goddard, "the advantages of a most attractive and impressive exterior. His voice possessed extraordinary compass and harmony, while his manners were the expression of that dignity and grace for which he was so remarkable." In 1792 he was succeeded in the presidency by the Rev. Jonathan Maxcy, who, the year before, upon the death of Manning, had been chosen professor of divinity. Mr. Maxcy, in 1802, succeeded Dr. Edwards in the presidency of Union college, New York. In 1804 he accepted an appointment to the presidency of the South Carolina college, over which institution he presided until his death in 1820. His collegiate addresses,

with a biographical introduction by Professor Romeo Elton, D. D., were published in New York, 1844, and in London, 1852. The Rev. Asa Messer succeeded Dr. Maxcy, and occupied the presidency 24 years, until 1826, when he retired from office. He survived his retirement 10 years, when he died at the age of 67. It was soon after the commencement of his administration, in Sept. 1804, that the college received the name of Brown university, in honor of Nicholas Brown, its most distinguished benefactor. Mr. Messer was succeeded in the presidency by the Rev. Francis Wayland, D. D., in 1827. His administration has been distinguished by many important reforms in the government of the college, and in the distribution of its studies. He resigned his office in 1855, having been the executive head of the university 28 years, during which period he administered its affairs with consummate ability, and by his personal character, and the genius and spirit of his writings, greatly extended its reputation and influence. Dr. Wayland was succeeded by the Rev. Barnas Sears, D. D., who was unanimously elected president at a special meeting of the corporation, held Aug. 21, 1855.—The university at present has 4 college buildings or halls, and a mansion-house for the president, as follows: university hall, built in 1770-'71, of brick, 4 stories high, 150 feet long and 46 wide, with a projection in the centre on the east and west sides of 10 by 82, containing 58 rooms for officers and students; Hope college, built in 1821-'22, of brick, 4 stories high, 120 feet long and 40 wide, containing 48 rooms for officers and students, including 2 halls for the philemenian and united brothers societies; Manning hall, built in 1834-'35, of stone covered with cement, 90 feet in length, including the portico, by 42 in width, 2 stories high, containing upon the first floor the library room, and upon the second, the chapel; Rhode Island hall, built in 1839-'40, of stone covered with cement, 70 feet long by 42 wide, with a projection on the west side of 12 by 26, 2 stories high, containing on the first floor 2 lecture-rooms for the professors of chemistry and of natural philosophy, on the second floor an ample hall for the cabinet of mineralogy and geology, portraits, &c., and in the basement a chemical laboratory, suitable for conducting chemical analyses, and the various processes of chemistry applied to the arts. Its enclosures are graded and adorned with stately elms, comprising, with its adjoining grounds, upward of 14 acres of land, situated on high land in the eastern section of the city. Its invested funds, including the library fund, amount to \$200,000. The college library contains 28,500 carefully selected bound volumes, beside about 10,000 unbound pamphlets. The society libraries present in addition an aggregate of 6,000 volumes. The last triennial catalogue, published in 1856, gives the entire number of graduates as 1,909; of whom 1,212 are now living. Of this number of graduates 506

have been ordained as ministers, of whom 384 are now living. The present number of undergraduates is 925. The officers of instruction are the president, 8 professors, and an assistant professor, beside the librarian, whose duties are confined to his particular department. There are 2 vacations, one commencing about the last week in January, of 8 weeks; and another, commencing about the 2d week in July, of 8 weeks. Beside these, there are 2 recesses of 1 week each. The annual commencement exercises occur on the 1st Wednesday in Sept., during which week candidates for admission to the college are examined.

BROWNE, EDWARD, son of Sir Thomas Browne, and physician to Charles II., was born at Norwich in 1644. He was acquainted with Hebrew, Greek, and Latin, and familiar with several modern languages. In 1705 he was chosen president of the royal college of physicians. He published several volumes upon subjects connected with his travels, and also assisted in a translation of Plutarch's "Lives."

BROWNE, GEORGE, count, a Russian general, born in Ireland, June 15, 1698, died at Riga, Sept. 18, 1792. He gained much distinction in the Russian service, in which he was actively engaged from 1730 to 1762. He was successively taken prisoner by the Turks and the Prussians, and afterward appointed by Peter III. to command the army against Denmark, with the rank of field-marshal. Browne, however, declined taking a part in this war, which he deemed unjust, and the czar at first deprived him of his new dignities and ordered him to leave the country, but soon recalled him to reinstate him in his position, and to make him governor of Livonia, which office he held for nearly 30 years. The title of count was conferred on him in 1779 by the emperor Joseph II.

BROWNE, ISAAC HAWKINS, an English poet, born at Burton-on-Trent in 1705, died in 1760. Among a collection of poems which he published, a short one called the "Pipe of Tobacco" obtained great popularity. He entered parliament for a Shropshire borough in 1744, but he was too timid to speak in the house. His reputation mainly rests on his Latin poem, *De Animi Immortalitate*, modelled on the style of Lucretius and Virgil. It appeared in 1754.

BROWNE, JOHN ROSS, an American traveler and humorist, commenced his career in his 18th year by the descent of the Ohio and Mississippi, from Louisville to New Orleans. In 1846, after rambling over the United States and a great part of the world, he published "Etchings of a Whaling Cruise, with Notes of a Sojourn on the Island of Zanzibar." He has been in California and the Holy Land, and made all his readers merry with the account of his humorous adventures, as presented in his "Yusef, or the Journey of the Fragi, a Crusade in the East."

BROWNE, MARY ANN (MRS. JAMES GRAY), an English poetess, born at Maidenhead Thicket,

Berkshire, Sept. 24, 1812, died at Cork, Jan. 28, 1846. Her 1st volume, "Mont Blanc and other Poems," was published before she was 15. Her 2d volume, "Ada," appeared in 1828. "Repentance and other Poems" (chiefly of a religious character) followed in 1829. The "Coronal" and "Birthday Gift" were published in 1833 and 1834. "Ignatia," her longest and most finished work, was published in 1838. She also became a contributor to the "Dublin University Magazine," for which she wrote a series of prose tales entitled "Recollections of a Portrait Painter," and a number of poems, afterward collected as "Sketches from the Antique," and published in 1844. About the same time a volume of "Sacred Poems" appeared. In 1842 she was married, at Aghada, near Cork, to Mr. James Gray, a nephew of the Ettrick Shepherd.

BROWNE, MAXIMILIAN ULYSSES, an Austrian general, of the same Irish family as the Russian general, George Browne, born in Basel, Oct. 23, 1705, died in Prague, June 26, 1757. His father, loyal to the cause of James II., having left Great Britain, took service in the Austrian army, and attained the rank of count; the son entered upon a military career in Austria under favorable auspices. Toward the close of 1740 he was selected to oppose Frederic the Great's invasion of Silesia, after having by his ability in previous campaigns against the French, Sardinians, and Turks, obtained a high rank in the army and a position as member of the board of war. Having taken a prominent part in the operations against the Prussians, French, and Italians, and especially in the victory over the united French and Italian armies at Piacenza, he was appointed, in 1749, governor of Transylvania; in 1751, commander-in-chief of Bohemia, and field-marshal in 1754. He died from a wound received on the battle-field of Prague. His military skill was not only appreciated by the Austrians, but by no one more sincerely than by his formidable opponent, the great Frederic.

BROWNE, SIMON, an English theologian, born in 1680, at Shepton-Mallet in Somersetshire, died in 1732. He was pastor of dissenting congregations successively in Portsmouth and London, and was both admired for his eloquence and highly esteemed for his purity of life. In 1723, by the sudden death of his wife and only son, he was so violently affected that he fell into a remarkable psychological illusion. He conceived that the Almighty had taken away from him his rational soul, and thus that he was bereft of the prerogatives, and sunk beneath the level of humanity. He resigned his pastoral office, withdrew to his native town, and refused all society. Yet it was during this retirement that he published his principal works, which were directed against the opinions of Woolston and Tindal, and which display learning and a vigorous understanding.

BROWNE, SIR THOMAS, an English physician and author, born in London in 1605, died Oct.

19, 1682. After studying at Oxford he took his degree at Leyden, returned to England, and, in 1686, established himself at Norwich, where he practised his profession. His first work, entitled *Religio Medici*, appeared in 1642. It was a sort of confession of faith, remarkable for its quaint and original fancy, and it was soon translated into Latin and several continental languages, and gave him a wide reputation as a literary man. This was followed, in 1646, by his *Pseudodoxia Epidemica*, or "Inquiry into Vulgar Errors," the learning displayed in which was such that it has been called a cyclopædia of contemporary knowledge. In 1658 appeared his *Hydriotaphia*, "Urn-burial, or Discourse on Sepulchral Urns," a peculiarly eloquent and sombre dissertation on the funereal monuments of antiquity. His style abounds in rare and felicitous expressions, but in his eagerness for brevity and force he often becomes obscure, and no other writer has so freely formed English words from the Latin.

BROWNE, WILLIAM, an English poet, born in 1590, at Tavistock, in Devonshire, died in 1645. He was educated at Oxford, and was afterward tutor successively to the earls of Caernarvon and of Pembroke. His principal poetical works are entitled "Britannia's Pastorals" and the "Shepherd's Pipe." They contain some fine descriptive passages, and were admired by Selden and Ben Jonson.

BROWNE, SIR WILLIAM, M. D., born 1692, died 1774. He wrote several essays on optics and subjects connected with natural philosophy, and bequeathed a sum of money to the university of Cambridge, the interest of which was appropriated to payment for 3 gold medals to be given for the best Greek and Latin odes and epigrams written by undergraduates.

BROWNE, WILLIAM GEORGE, an English traveller, born in London in 1768, died in 1818. In several expeditions he travelled through Egypt and some parts of the interior of Africa, and through Asia Minor and Armenia. In 1812 he proposed a more extensive journey through central Asia. He had already, in 1813, arrived at Tabreez, on his way to Tartary, when his party was attacked by banditti and himself murdered. An account of his earlier travels was published in London in 1799.

BROWNELL, THOMAS CHURCH, D.D., LL.D., an American clergyman, bishop of Connecticut, and presiding bishop in the Protestant Episcopal church, born at Westport, Mass., Oct. 12, 1779; son of the Hon. Sylvester Brownell, and on the mother's side descended from Col. Benjamin Church, famous in early colonial history, is the oldest of a family of 11 children. His early education was that which was then accessible to a farmer's son; but desirous of advancing in knowledge, he became a student in Bristol academy at Taunton, and pursued the studies necessary for entrance upon a collegiate career. In September, 1800, he entered the college in Providence, R. I., now Brown university. Two years later, Dr. Maxcy,

the president, having removed to Schenectady, N. Y., and taken the headship of Union college, Mr. Brownell, through strong personal regard, accompanied him, and entering the junior class there, was graduated with the highest honors in 1804. The next year he accepted the post of tutor in Latin and Greek in his alma mater; in 1807 he was appointed to the chair of belles-lettres and moral philosophy; and in 1809 was chosen the first professor of chemistry and mineralogy. The following year, by permission of the trustees, was spent in travelling through Great Britain and Ireland, a good part of it on foot, and in gathering materials and apparatus for carrying forward vigorously the department under his charge. Early in August, 1811, Professor Brownell was married to Charlotte Dickinson of Lansingburg, N. Y.; and having been baptized in 1813, confirmed and admitted to communion, he began to turn his attention seriously to preparation for the ministry. He had for many years been dissatisfied with the religious system under which he had been born and brought up, viz., that of Calvinistic Congregationalism; and feeling persuaded, after much study, that he ought to receive his commission at the hands of a bishop, he devoted his leisure hours to the study of theology, was ordained by Bishop Hobart, in Trinity church, N. Y., April 11, 1816, and in connection with his professional duties gave himself to the work of a missionary in Schenectady and its vicinity. In the summer of 1818 he received and accepted an invitation to become an assistant minister in Trinity church, New York. The diocese of Connecticut, which, since the death of Bishop Jarvis in 1813, had been under the provisional charge of Bishop Hobart of New York, having made choice of Dr. Brownell to fill the existing vacancy, he was consecrated in Trinity church, New Haven, Oct. 27, 1819, and removed at once to his new field of labor. During his long episcopate of nearly 40 years, Bishop Brownell has been actively and efficiently engaged in the duties of his station; and has maintained a high character for soundness in the faith, excellence of judgment, consistency of deportment, and earnestness of devotion to the cause of religion and learning. Washington (now Trinity) college, at Hartford, Conn., took its rise under his auspices in 1824; he became its first president, resigning in 1831; and the success of the college, as an institution under the control of the Episcopal church, has been of a very gratifying description. Bishop Brownell is author of "The Family Prayer Book," a large octavo, which contains a carefully compiled commentary, historical, explanatory, doctrinal, and practical, on the liturgy of the Episcopal church. This able volume was published in 1823, and has been received with much favor among Episcopalians, having gone through numerous editions. In 1839-40, Bishop Brownell prepared 5 12mo volumes entitled "Religion of the Heart and Life," being a compilation from the best writers on experimental and practical piety, with introduc-

tions, &c. He is also author of several important charges to his clergy, and various sermons on special occasions; and has contributed in other ways to the current literature of the day.—In connection with this brief outline of Bishop Brownell's life and career, it may here be stated that the venerable prelate, beside his official relation to his diocese, occupies the post of presiding bishop in the Protestant Episcopal church in the United States. According to the principles of the Episcopal church (which now numbers nearly 40 bishops), the various dioceses are officially on an entire equality; but from the necessities of the case, one of their number is designated to hold the position of presiding bishop. Bishop Seabury of Connecticut presided in the first general convention, in 1789; and Bishop Provost of New York, in that of 1792. The apostolic William White of Pennsylvania, the friend and intimate of Washington, presided in subsequent conventions until his death in 1836. Bishop Griswold of Massachusetts, and Bishop Chase of Illinois, also discharged the duties of this position. On the death of the latter, in 1852, Bishop Brownell became presiding bishop, which post he still occupies (1858). The duties of this station are not defined with precision, but consist principally in presiding in general conventions, calling special meetings of the convention, and giving attention to the needful steps in regard to the consecration, resignation, and trial of bishops. The presiding bishop may not improperly be termed a *primus inter pares*, and he is not charged with any archiepiscopal or metropolitan power. The Episcopal church in the United States appears to have studiously laid aside that feature in the arrangements of the church of England, by which one bishop is placed under the jurisdiction of another. Each of her bishops is consecrated for a particular diocese, where he is always to remain, and no precedence is given to any one of the bishops, except that the post of presiding bishop is held by that one who is senior to his brethren in the time of his consecration.

BROWNIE, in Scottish superstition, a well-disposed sprite, corresponding to the Robin Goodfellow of England, who was wont during the night to do churning, threshing, &c., by way of helping the dairy-maid and farmer's boy.

BROWNING, ELIZABETH BARRETT, an English poetess, and wife of Robert Browning, was born in London in 1809, and educated with great care in a masculine range of studies, and with a masculine strictness of intellectual discipline. She began to write at a very early age for periodical publications. In 1826 there appeared from her pen a volume entitled "An Essay on Mind, with other Poems." No portion of this volume is included in the collected poems upon which she has set the seal of her matured judgment, and her decision is to be commended, though it is a volume of much merit and more promise. The "Essay on Mind," a metaphysical and reflective poem in the heroic stanza, viewed as the production of a young lady of 16

or 17, must be pronounced a remarkable performance. In 1833 she again appeared before the public, in a volume called "Prometheus Bound, and Miscellaneous Poems." Her version of the "Prometheus Bound" cannot be pronounced a successful literary enterprise, and of this she herself in due time became conscious. She pronounced it an "early failure," and replaced it by a new translation, which is certainly a marked improvement upon its predecessor. Some of the smaller poems in this volume show the rapid growth of her mind since her first publication, and are marked by some of the characteristics of her most mature productions. In 1838 she published a volume entitled "The Seraphim, and other Poems," of which the principal is a lyrical drama, embodying the thoughts and emotions which may be supposed to be awakened in angelic natures by the spectacle of the crucifixion: a theme to tax the highest powers, and from which the highest powers would do well to recoil. This production, as well as her "Drama of Exile," a subsequent work, in which the theme is drawn from the fall of man, is a very bold but not very successful effort to soar into heights of speculation and invention, in which no wings less strong than Dante's or Milton's can bear the poet. The criticism which pronounced them failures would still acknowledge them to be the failures of a remarkable mind, conscious of power, but not of the limitations of that power, and boldly grappling with subjects which a ripened self-knowledge would not have ventured upon. In some of the smaller poems contained in this last-mentioned volume, such as "Isobel's Child," "My Dove," and "The Sleep," we have glimpses and intimations of all that her full-orbed genius was destined to accomplish. About the time of the publication of this volume a new experience was infused into her life, destined to act alike upon the development of her moral nature and of her genius. Her health, which had always been delicate, was seriously impaired by the rupture of a blood-vessel, and for a long time she was trembling on the narrow verge between life and death. She was taken to Devonshire for the soothing and restoring influences of its mild climate, and while there her nervous system received a fearful shock, and her heart a deep and lasting wound, by the death by drowning of a beloved brother. Removed by slow stages to her home in London, her life for many years was that of a confirmed and seemingly hopeless invalid. She did not leave her room, and saw only the members of her own family, and occasionally a few intimate friends. The long and dreary hours of illness were soothed by composition and study. She sought refreshment and oblivion of pain, not in those lighter forms of literature which usually soothe the languor of a sick couch, but in those grave and deep tasks which would seem to demand masculine powers in their best estate. The poets and philosophers of Greece were the companions of

her mind; and we believe that some of the inspired writers of the Old Testament were studied by her in their original language. Some of the fruits of her wide and patient research were given to the public in the form of a series of articles on the Greek Christian poets, which appeared in the London "Athenæum." In 1844 the first collected edition of her poems was published, in 2 volumes, with a characteristic and affectionate dedication to her father. In this her earlier productions were revised, and many pieces appeared for the first time in print. Among these last was "Lady Geraldine's Courtship," one of the most beautiful of her poems, of 98 stanzas in length, and said by Miss Mitford, in her "Recollections of a Literary Life," to have been composed in the incredibly short space of 12 hours. In this poem there was a graceful compliment to Mr. Browning, to whom she had not previously been personally known. The story has been told to us—we will not vouch for its truth, as "imaginings as one would" are apt to be interpolated into such incidents—that the grateful poet called to express in person his acknowledgments, and that he was admitted into the invalid's presence by the happy mistake of a new servant. At any rate, he did see her, and had permission to renew his visit. The mutual attraction grew more powerful, and the convergence more rapid; the acquaintance became the friend, and the friend was transformed into the lover. Kind physicians and tender nurses had long watched over the couch of sickness; but love, the magician, brought restorative influences before unknown, and her health so far improved that she did not hesitate to accept the hand that was offered to her. She became the wife of Robert Browning in the autumn of 1846. The growth and progress of this new feeling, and its effects upon her heart and mind, are described with rare grace of expression, as well as exquisite depth and tenderness of feeling, in that remarkable series of poems called "Sonnets from the Portuguese," which appeared for the first time in the second edition of her collected poems, published in 1850. Often as the passion of love has been treated by poets, it cannot be denied that Mrs. Browning has here expressed and delineated it in a manner entirely original, and thrown upon it the gleams of a light at once tender and spiritual, which can only be paralleled in the immortal lines in which Dante has embalmed the name of Beatrice. Since their marriage, Mr. and Mrs. Browning have resided for the most part in Florence. In 1849 their happiness was completed by the birth of a son, an only child, thus rounding the circle of her womanly experiences, and giving her the power to feel, in her own consciousness, all that is comprehended in the words daughter, sister, wife, and mother. In 1851 she published "Casa Guidi Windows," a poem on some of the social and political aspects of modern Italy, the title of which is taken from the name of the residence occupied by her and her husband in

Florence. In 1856 she published "Aurora Leigh," a narrative poem in 9 books; a sort of versified novel, of which the subject, characters, and incidents, are taken from English life and manners of the present day.—Mrs. Browning's rank among the living poets who write in English is very high. In imaginative power and originality of intellectual construction, she is, perhaps, entitled to the very first place. In comparing her earliest with her latest productions, we are struck with the prodigious progress she has made, alike in the extent of her intellectual resources and the skill with which they are used. The difference between creeping and flying is not greater than is the space between the timid movement and imitative structure of the "Essay on Mind," and the sweep, energy, and grace of "Aurora Leigh," so full of original power, so warm with vivid life. She combines in an extraordinary degree the distinctive characteristics of the masculine understanding and the feminine heart. She thinks all like a man, and feels all like a woman. She has considered carefully, and is capable of treating wisely, the deepest social problems which have engaged the attention of the most sagacious and practical minds, and yet no one has ever given truer and more fervid expression to all the joys, the sorrows, the aspirations, and the visions of the purely womanly nature. Society in the aggregate, and the self-consciousness of the solitary individual, are held in her grasp with equal ease, and observed with equal accuracy. From her "Casa Guidi Windows," for instance, there might be taken away the rich poetry, the splendid pictures, and the vivid illustrations, and there would still be left a production remarkable for good sense, sharp observation, and just reflection. Her mind moves upon the symmetrical wings of reason and imagination. No one feels the poetry of Italy more keenly; no one paints the beauty of Italy more enthusiastically; but she has a statesman's comprehension of the social and political problems which perplex the well-wishers of that unfortunate country, and discusses them with the spirit of a statesman. Her range of subjects, too, is very wide, and her variety of power is very great; whether she deals with the shadowy forms of legendary superstition, or depicts the struggles of a strong and unsubmitive spirit, or paints pictures of pure fancy, or gives expression to the affections which bloom along the common path of life, or throws the light of poetry over its humblest duties and relations, she seems equally at home in all. Perhaps her most characteristic trait, as a woman and a writer, is her intense and impassioned sympathy with all forms of suffering, and an equally strong indignation at all kinds of wrong and injustice. All persons who have themselves suffered deeply, and attained submission after much struggle, are attracted and strengthened by her poetry. In giving form and expression to the affections of woman's nature, she is sometimes imaginative, some-

times passionate, sometimes tender, sometimes playful, and always true. No female writer has given more glowing and deep-hearted representations of the qualities which make the crowning excellence of womanhood. Many rank "Aurora Leigh" as the highest and most finished expression of Mrs. Browning's genius. In none other of her works is there such variety of power, and such a blending of masculine understanding and feminine sensibility. Many of the incidents are improbable, some of them are of questionable propriety, and sometimes images are presented, and expressions are used, which a severe taste must condemn; but it abounds with passages which show a profound knowledge of the age in which we live, as well as of humanity in the abstract, with striking illustrations and picturesque descriptions. No poem has been written in our time which presents in such distinct outline, and so touched with the finest lights of poetry, the form and pressure of the present period. Much of Mrs. Browning's poetry might be improved by a little compression; but this is more true of her earlier than her later productions. Her readers are sometimes perplexed with passages of a cloudy indistinctness, in which the meaning either has not been clear to herself, or is not clearly presented to the comprehension of others. Her bold and uncompromising spirit sometimes carries her beyond the limits of perfect good taste. Her command of the lawful resources of the English language is very great, but with these she is not always content.

BROWNING, ROBERT, an English poet, born in Camberwell, a suburb of London, in 1812, and educated at the London university. His father's family being dissenters, his mind was trained and his character formed under influences less peculiarly English than those to which youths are exposed in the great public schools and the 2 leading universities of that country. At the age of 20 he went to Italy, and passed some time there. To a man like him, of sharp philosophic insight, as well as of poetical imagination, and with the healthiest and happiest sense of life, it may well be imagined how many attractions Italy presented, and how much the influences to which he was there subjected, at that plastic period of life, helped to form the fabric of his mind. The course of his Italian life and experiences was unlike that through which his countrymen usually run in that land, which almost all educated Englishmen visit. His object was to make himself familiar with all that was most distinctly and peculiarly Italian. The mediæval history of that country, so fruitful in records of fervid passion and startling crime, was studied in its abundant chronicles and local memoirs. He spent much time in the monasteries of Lombardy and Venice, exploring their dusty libraries and book closets, and, in the silent air of monastic life, calling up a more distinct image of the past than could have been vouchsafed to him in any "bustle of resort." But he devoted himself with equal energy to the task of making

himself acquainted with the life, habits, and characteristics of the people who were living and moving around him. He mingled with them in their daily paths with a freedom and unreserve unusual among his shy and exclusive countrymen. He saw and studied a class of Italian population of which most travellers have only occasional glances—the peasants in their rural homes, and the residents of those dreamy old towns in which life flows on with so quiet and noiseless a current. No traveller ever brought away a larger intellectual harvest from Italy than Mr. Browning; and the effect of his Italian life is distinctly perceived by the readers of his poetry, alike in his choice of subjects and his treatment of them. In 1835 appeared his "Paracelsus," the first work in which his poetical claims were submitted to the judgment of his contemporaries. It is a dramatic poem—dramatic in form, at least—in which the principal character was the celebrated empiric and alchemist of the 16th century. It delineates the course of a rich and generous nature, full of high aspirations, exposed to many temptations, often going astray, but growing nobler and finer to the last, and, after many aberrations, drawn back to those fountains of truth and goodness from which his earliest inspirations were derived. Such a theme gave ample scope to Mr. Browning's unrivalled power of subtle analysis and acute delineation of the various forms of mental consciousness. It did not attract general attention, and it has not the elements which command and secure popularity; but among the discerning few it was welcomed as the work of a truly original mind, rich in performance, and more rich in promise, whose future career was to be watched with expectation and interest. Justice was done to its tone of intellectual freedom, to the rich eloquence of many of its passages, to the fine descriptions and illustrations it contains, and the depth and tenderness of feeling it occasionally reveals; and its obvious defects of form, structure, and rhythm, the vague cloudiness of some of its most ambitious portions, and the daring extravagance of some of its speculations, were pardoned to the youth of a man of genius, not yet fully broken in to the easy use of his ample powers. In 1837, a tragedy from his pen, called "Strafford," was presented on the stage in London. The subject, drawn from the most vital and pregnant period of English history, commended itself to the sympathies and patriotism of an English audience, but in spite of this, and in spite of the admirable acting of his friend Macready, by whom the principal character was sustained, it met with very moderate success. In 1840 he published "Sordello," a poem, the subject of which was drawn from the supposed life of the Provençal poet, mentioned in the 6th canto of Dante's *Purgatorio*. The general public pronounced this work an unintelligible rhapsody, with no meaning at all; but the adventurous few, who were not willing to pass by on the other side a poem by the author of

"Paracelsus," affirmed that there was meaning in it, though hard to come at, and that patient and diligent search would reveal passages of profound thought and rare beauty. But the world was not willing to take this trouble, and the world was right. A young poet has no right to be obscure; for the world is so full of poetry that is both good and intelligible, that we cannot afford to study that which may be good, but is not intelligible. Mr. Browning has judiciously omitted "Sordello" in the edition of his collective poems hereinafter mentioned. Between 1842 and 1846, there appeared from his pen several successive numbers of a collection of dramatic and lyric poems, to which he gave the title of "Bells and Pomegranates;" an affected designation, and which had the further disadvantage of giving no hint as to the nature of the contents. Among these was a tragedy of striking poetical power, called "A Blot on the Scutcheon," which was produced in Drury lane theatre in 1843, but without marked success. Another play of his, the "Duchess of Cleves," was subsequently brought out at the Haymarket, Miss Oushman personating the heroine. In 1849, his collective poems were published in 2 volumes by Chapman and Hall of London, and republished in this country by Ticknor and Fields of Boston. This edition, in which the author's poems were carefully revised, introduced him to a larger circle of readers than he had before enjoyed, and made many distinctly acquainted with his genius, who had before known him only by report. In 1850 he published "Christmas Eve and Easter Day," a poem, in which a picture is presented from the author's point of view of some of the religious and spiritual aspects of the age, and some of his own convictions are expressed. It contains some very striking descriptions, some passages of very acute reasoning, and some flashes of peculiar humor, and its general tone is that of earnest religious faith. This poem has not been republished in America. In 1852 he published an introductory essay to a collection of letters by Shelley, but it having been ascertained that the letters were spurious, the volume was withdrawn from circulation. In 1855 appeared his "Men and Women," a collection of poems, republished in America by Ticknor and Fields. In this volume the metaphysical and analytical qualities of Mr. Browning's genius are more distinctly displayed than the imaginative and the purely poetical, and some of the pieces, "Bishop Blougram's Apology," for instance, are as hard reading as a lecture of Sir William Hamilton's, or a chapter of Mill's "Logic." Most readers have broken down in the early pages, and none but his most resolute admirers have gone through with it.—In November, 1846, Mr. Browning was married to Elizabeth B. Barrett, as has been already stated in our notice

of her. Since their marriage, Mr. and Mrs. Browning have mostly resided in Italy, with occasional visits to Paris and England.—That Mr. Browning is a true poet, and a poet of marked and original genius, no candid and catholic critic can for a moment doubt. He is beyond all his contemporaries remarkable for the union of the imaginative vision and the reasoning faculty—of the power which analyzes and divides, and the power that fuses and blends. Most of his poems are dramatic in form, and his genius is essentially dramatic in its quality. His characters are distinct individual creations, and his dramas are informed and penetrated with a unity of spirit from beginning to end. The action is unfolded, step by step, in conformity with the highest requisitions of dramatic art. Thus each play of his must be read and judged as a whole, and no dramatic writer has written fewer scenes which can with advantage be detached from the context, and presented by themselves. But the lyrical faculty is strong in him, as well as the dramatic. Such pieces as "The Pied Piper of Hamelin," "How they brought the Good News from Ghent to Aix," and "The Lost Leader," have all the pulse and ring of the old ballad. His genius is peculiar in its essence, and sometimes fantastic and even grotesque in its manifestations, but thoroughly healthy in its tone. Chaucer himself did not look upon nature and life with a freer and heartier spirit. In no poet who has written so much, do we find fewer lines which are inspired by purely personal feeling. He makes revelations, but not confessions. But with all his various merits, Mr. Browning is not a popular poet; and this arises partly from peculiarities of substance, and partly from formal defects. He does not address the common heart, nor draw his themes from the daily paths of common life. He writes poetry for poets, and his poetry bears the same relation to common poetry that alchemy does to chemistry—it is a finer essence and a more subtle mystery. Much of what he has written requires study and concentration of mind in order to comprehend it. His sentences are often involved and intricate in structure; his parentheses are too frequent and too long; his metaphors are sometimes pushed to exhaustion; his versification is lawless, and he has apparently little ear for rhythmical music. To those who are yet ignorant of the claims and powers of one of the most remarkable writers of our time, and would fain know something about him, we would recommend "A Blot on the Scutcheon," and "Pippa Passes." The latter is a remarkable poem, and animated with some of the finest qualities of Mr. Browning's genius; and though it requires a more careful study than poetry usually exacts, it will well repay all that is given to it.

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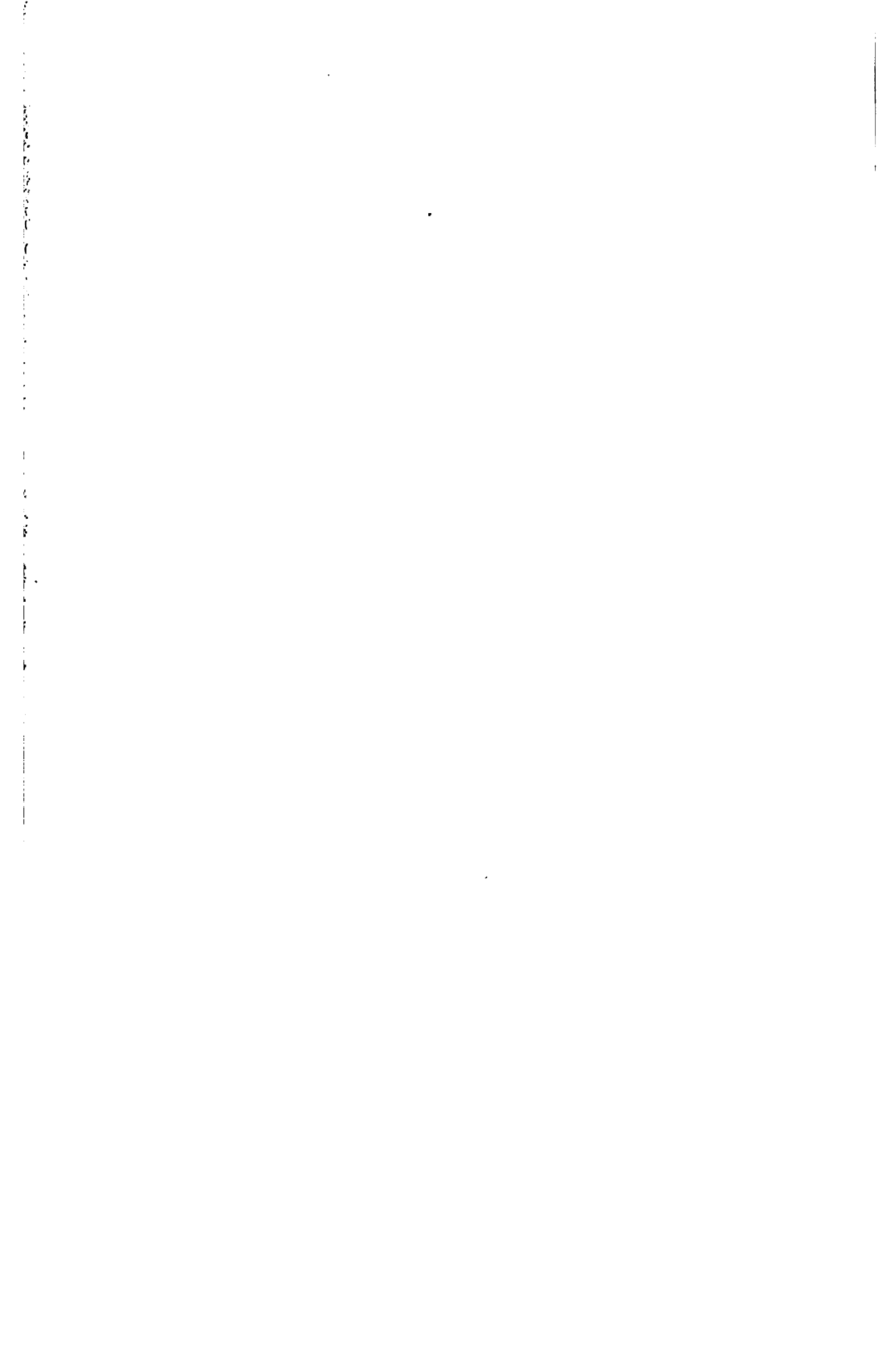
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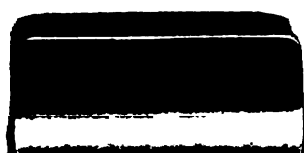




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